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A GEOGRAPHIC STUDY OF THE DISTRIBUTION OF
POPULATION CHANGE IN ALBERTA, 1931-1961

by

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A THESIS

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FACULTY OF GRADUATE STUDIES

The undersigned certify that they have read, and recommend to the Faculty of Graduate Studies for acceptance, a thesis entitled A Geographic Study of the Distribution of Population Change in Alberta, 1931-1961. Submitted by Margaret Eleanor Crawford in partial fulfilment of the requirements for the degree of Master of Arts.

Date ..October.19,.1962.

ABSTRACT

This thesis is an attempt to answer the question - to what extent are the patterns of population change from 1931 to 1961 in census subdivisions in Alberta different from one another and from the pattern of change in the Province as a whole?

As the question implies, emphasis is placed on the continuity of change and the areal distribution of changes. Population fluctuations are analysed from the points of view of rates of change, percentage change and variability, and grouping of patterns of rates of change is carried out with the relation to area constantly in mind.

It is found that few census subdivisions have patterns of change similar to that of the Province. Those which do are located in widely separated areas having no one causal factor responsible for continuous growth, other than general prosperity, in common. Most census subdivisions have markedly fluctuating population patterns with a general decline in rural and increase in urban numbers during the thirty-year period. Changes in agriculture, development of minerals and transport facilities, chosen for illustration, are only a few factors to which these changes may be related.

ACKNOWLEDGEMENTS

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INTRODUCTION

This thesis, A Geographic Study of the Distribution of Population Change in Alberta, 1931-1961, is essentially geographic in its viewpoint. Statistical analysis of population data may be carried out by numerous specialists besides geographers: demographers, economists and sociologists. Each will interpret the results in his own distinctive way. The geographer, particularly interested in the character of differing regions, uses the statistical data to understand the manner in which population contributes to the character of area, and the way in which broad regions may be defined and differentiated on the basis of population change.

In this study of Alberta, population is used as a focus. It is common knowledge that since provincial status was granted the number of persons in the Province has been growing continuously even if not at a uniform rate. Realising that a large area and a great variety of conditions which might affect population change are found in Alberta, it was decided to investigate change at the census subdivision level. The question was posed: to what extent are the patterns of population change of census subdivisions, throughout the thirty-year period, different from one another and from the pattern of change in the Province as a whole? It is chiefly with this theme that the thesis is concerned.

The study, which uses mainly census data, has a statistical basis. A second aim, essentially geographic, is to eliminate so far as is possible cumbersome statistical tables, and to present the data cartographically.

Population change is a continuous phenomenon. Relevant aspects of the physical setting and a descriptive tracing of the historical development of settlement before 1931 are included as necessary background for more recent changes.

The distributive aspect is of prime importance, but to complete the background of the study it seems essential to include a brief discussion of some inherent characteristics of the population of the Province as contributors to change. Size, age and sex structure, the elements of change - births, deaths and migrations- are considered briefly.

In order to appreciate the variety of fluctuations in population change throughout the Province during the last thirty years the changing rates of growth, percentage changes in rural population and variability of change are considered at the census subdivision level. In spite of the large number of census subdivisions involved there are certain recurring patterns in rates of population change in Alberta. These patterns can be defined and used as the basis for further discussion.

The interpretation of the population changes in the Province must rest on an areal basis. Census subdivisions and townships¹ which were used in the analysis are convenient bases for the collection of data, and are satisfactory for statistical analysis. However, in themselves they have no particular significance for a geographer interested in those relationships which characterise areas and which may show no connection with these arbitrarily defined census subdivisions.

¹ To build up a comparable series of data, statistics for townships for each census year to 1946 inclusive were taken and expressed in terms of the 1956 census subdivisions.

It must be emphasised that while such units necessarily provide the framework for analysis no stress is laid on the exact location of the boundaries of census subdivisions or groups of census subdivisions, particularly when the factors affecting the patterns of change are considered.

Patterns of population change may be discussed in relation to many factors which are influential in their occurrence. Natural resources, certain features of the physical environment, economic and social changes were selected as illustrations, and density, change, variability and rural-urban differences in population are discussed in relation to them. Since limits of the factors influencing population change can not be set up by a geographer any more easily than by specialists in other fields, no complete explanation of all the changes found in the Province or its census subdivisions has been attempted or has been felt necessary. Rather, certain specifically located examples of characteristic recurring patterns of change are discussed with reference to the selected causal factors. In this way the confusion and repetition involved in dealing with more than one hundred census subdivisions can be avoided most easily. A general, brief discussion at the Provincial level is included to clarify the features on which it was decided to place emphasis.

Population forecast is outside the scope of the topic which refers specifically to the period 1931-1961, and no detailed techniques of population projection have been applied to the data. However, certain trends in population change emerge from a study of the census subdivisions. Their fluctuations would suggest that even with an

extensive knowledge of past population history projections should be undertaken only with the greatest caution, and that generalisations drawn from data can not be applied successfully to units other than those to which they referred initially.

The period 1931-1961 was chosen for study partially because it is of sufficient length to provide adequate illustration of the fluctuation of population changes, and partially because little work on a Provincial basis has been undertaken by geographers.² It is also a period during which the Province of Alberta has felt the effects of economic depression with its attendant difficulties, a major war, and more recently, the rapid economic changes brought about by the development of mineral resources. Although the extremes of prosperity and depression make it more difficult to generalise, population change holds a great deal of interest for anyone willing to face the problems of lack of statistical comparability of data, organisation of a large number of areal units, and the selection of those which have been most important from an intricate complex of factors affecting population change.

² W.A. Mackintosh has edited a series of nine volumes on the Canadian Frontiers of Settlement. This is an excellent source of reference for the period before 1931.

LOCATION OF STUDY AREA



Scale 1 : 100million

Fig. 1. Source: Canadian Oxford Atlas, p. 17.

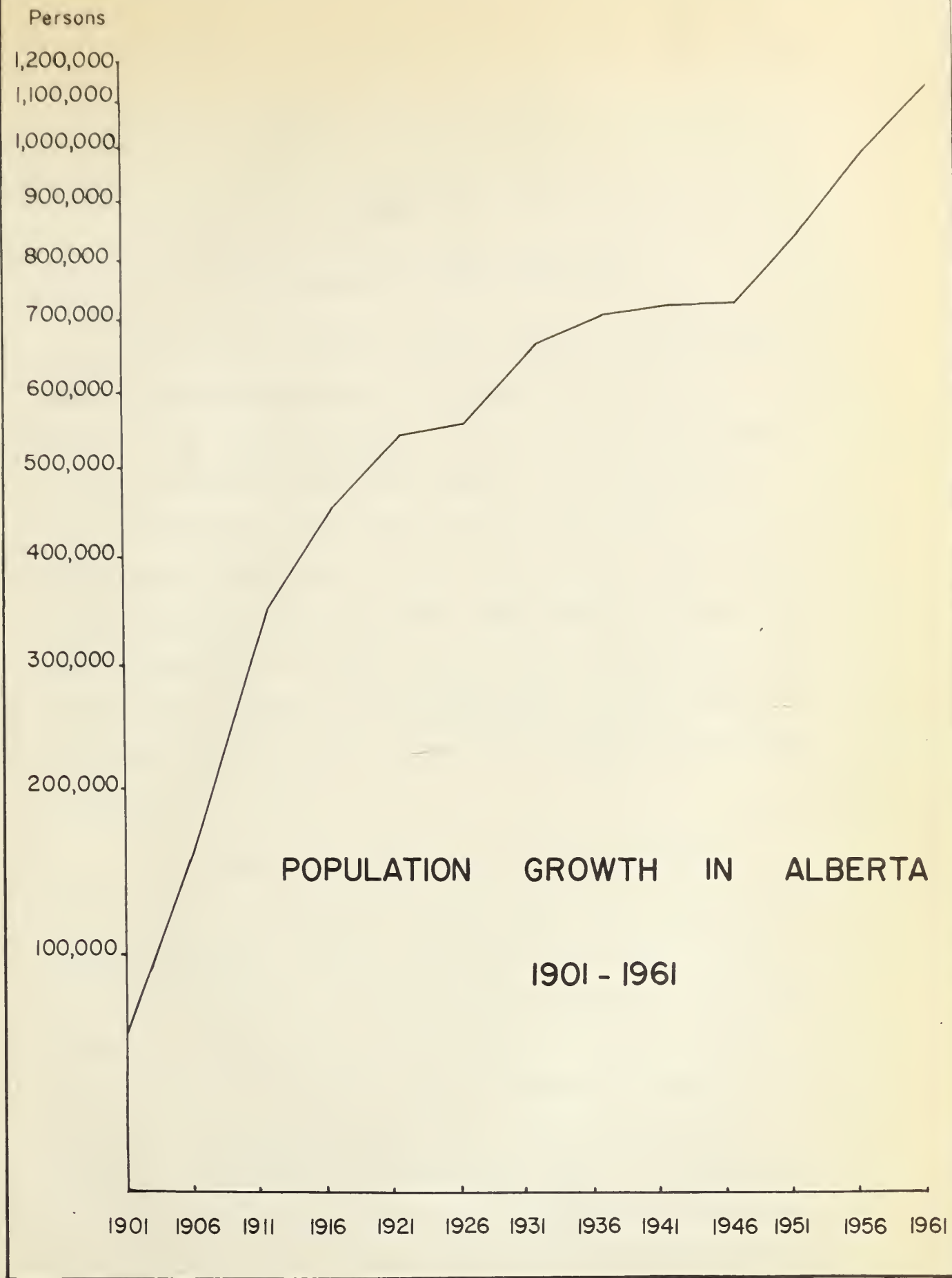


Fig. 2. Source: Census of Canada

CHAPTER I

THE SETTLEMENT OF ALBERTA BEFORE 1931

The Province of Alberta stretches north for about 760 miles from the forty-ninth parallel, its boundary with the State of Montana, to the sixtieth parallel. It ranges from 182 to 404 miles in east-west extent and the entire Province covers 255,285 square miles, including 6,485 square miles of fresh water (Fig. 1). By 1901 just over 73,000 people occupied this large area. The pattern of distribution was far from uniform. This chapter is concerned with the changing numbers of people who settled in the Province from 1901 to the present day (Fig. 2), the changing area occupied, and with conditions which, during that period, had a bearing on the geography of population.

ASSESSMENTS OF SETTLEMENT AND AGRICULTURAL POTENTIAL

In 1870 the Canadian Government bought the territories of the Hudson's Bay Company, and from then onwards consciously fostered agricultural settlement. Before that date settlement was sparse and generally associated with river routes and trans-shipment points. The main export of the area was furs, and most of the people in the trade were not permanent settlers. Even around trading posts agriculture was neglected, and many supplies had to be brought from settlements farther east. River routes were particularly important and the routes of some early major explorations later became part of

the tenuous web of commercial links between the isolated hunter of the northwest and the retailers of furs in Europe.

The Government purchased the territories for various reasons, one of which was the development of agricultural settlement. There was, at the time, a feeling of optimism about Canada's future largely based on the availability of land, and the ready market and high prices paid for wheat in the United States.

In 1857 a select committee of the House of Commons presented a report on the possibility of settlement in the territory of the Hudson's Bay Company - the opinions of the witnesses called varied widely. Sir George Simpson, Governor of the Company, felt that no part was suitable because of scarcity of wood for fuel, inferior soil and the uncertainty of successful crops. Sir John Richardson, the Arctic explorer, stressed poor transport, while others observed that, despite obvious obstacles, only a policy of conscious discouragement had delayed settlement.

Various surveys and journeys of exploration were undertaken at this time, and one name which is familiar in this connection is that of Captain John Palliser. In 1857-1860 he explored the area from Lake Superior to beyond the Rocky Mountains recording "the physical features . . . the nature of its soil, its capability for agriculture, the quality of its timber and any indications of coal or other minerals."¹

¹ "Journals, Detailed Reports, and Observations Relative to the Exploration by Captain John Palliser of that Portion of British North America Which in Latitude Lies Between the British Boundary Line and the Height of Land of the Northern or Frozen Ocean Respectively and in Longitude Between the Western Shore of Lake Superior and the Pacific Ocean During the Years 1857, 1858, 1859 and 1860," British Parliamentary Papers 1863, pp. 4-5. Cited by W.A. Mackintosh, Prairie Settlement, Toronto, 1934, p. 31.

One of his objectives was

. . . to determine the present route of travel with a view to ascertain whether it could be either shortened or rendered less formidable by any reasonable outlay, and whether, if such an expenditure of capital were devoted to that object, there was any prospect of a result favourable to emigration or agriculture commensurate with the sacrifice.²

Captain Palliser divided the country between the Laurentian Shield and the Rockies into two parts: the fertile belt, which was the wooded park area, and the semi-arid desert, which was the treeless prairie.

The northern fertile belt had lakes and rivers to provide fish, rich pasture from which natural hay could support cattle throughout the year. There was timber for construction and fuel, but burning had left areas easy to clear. Natural advantages for settlement were present. Southeastern Alberta is included in Palliser's triangle,³ which he considered unsuited to settlement because of aridity, although it, too, was free from forest growth.

Professor Hind, geologist and naturalist on an exploratory expedition, considered the idea of settlement of the entire plains area impracticable.

Other visionaries have converted the 400,000 square miles drained by the Saskatchewan into a region of unbounded fertility and inexhaustible resources. Whereas a proper appreciation and use of the facts will convince the most sanguine that the larger portion of this area is in its present state unfit for

² Loc. cit.

³ Palliser's triangle is actually an irregular pentagon. Its base extends along the parallel 49°N from Turtle Mountain to the foot of the Rocky Mountains (i.e. 100° - 114°W). From the latter point the boundary extends north-northwest to Old Bow Fort about 50 miles west of Calgary, then north-northeast to Olds, Alberta. From there its boundary continues almost due east along the 52nd parallel to a little south of Saskatoon and from there southeast to Turtle Mountain.

permanent habitation of man both on account of the climate, soil and the absence of fuel.⁴

He considered that the wooded regions, the park belt and the tall grass prairie with the wooded banks of its rivers were suitable bases. There, black or dark brown soil was rich, forest growth suggested adequate precipitation and water and fuel supplies were available. The short grass prairie on the other hand had inadequate precipitation, inferior soils, lacked water and fuel and so was unsuitable for settlement. He did not discuss the problem of excessive frost in the north or of rainfall variability.

Discussion of the potential of the northern part of the Province had to wait for decades, while debate about initial settlement still continues.⁵

Palliser, who worked for the Government of Great Britain, and Hind, who worked for the Canadian Government, agreed that the semi-arid southeastern part of the Province was not suited for settlement, unlike the fertile park belt in the central area and adjacent woodland. They did not expect rapid settlement anywhere, and like all other explorers stressed the need for improved transport throughout the area.

⁴ H.Y. Hind, "General Report on the Assiniboine-Saskatchewan Exploring Expedition," Appendix to the Journals of the Legislative Assembly of Canada, Toronto, 1859, Chapter XV. Cited by Mackintosh, op. cit., p. 38.

⁵ J.G. MacGregor, R.C. Marler, J.O. Patterson, Report of the Royal Commission on the Development of Northern Alberta, Edmonton, 1958, 115 pp.

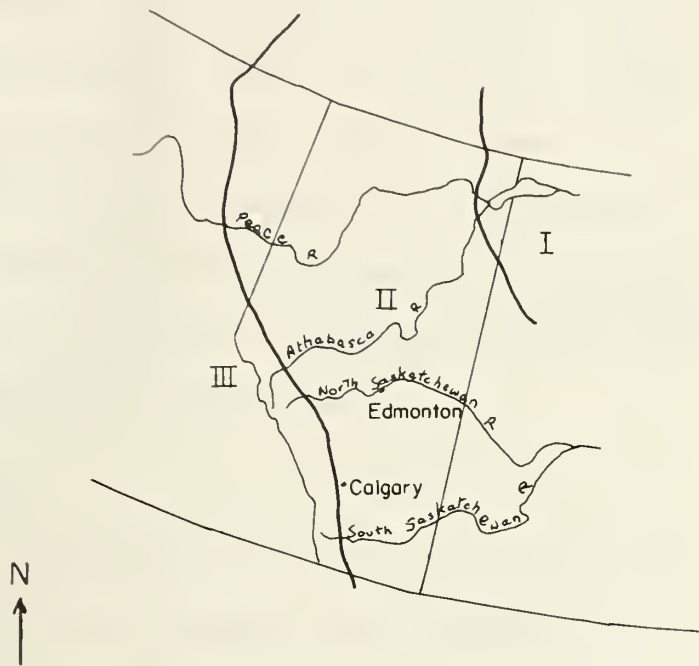
The decision to purchase the territory of the Hudson's Bay Company, and develop agriculture was accompanied by a decision to construct a transcontinental railway in Canadian territory, to make the journey through United States territory unnecessary. Professor John Macoun, botanist to the Engineer-in-Chief of the Canadian Pacific Railway, reported on much of the Hudson's Bay Company territory. He thought that Palliser had over-estimated the area of semi-arid land by using only the presence or absence of trees as an indicator, while neglecting to appreciate the presence of large buffalo herds as an indicator of good grazing. Macoun noticed that parts of the semi-arid area were surfaced with heavy Cretaceous clay which was impervious to rain. He also noticed that northern areas had higher summer temperatures and a higher proportion of the precipitation in the warm season than equivalent latitudes in eastern Canada. He was one of the first people to appreciate the importance of seasonal distribution rather than the annual amount of precipitation.

The actual cultivable acreage suggested by these observers and others who studied the area differed considerably. Perhaps it is more important at this point to amplify some of the elements which they realised must be considered before settlement should be encouraged.

THE PHYSICAL SETTING

Elements of the physical setting which are of particular relevance to the settlement of the Province are landforms, climate, soils and vegetation. In this section they are considered generally. Any such generalisations mask the many varying details of the

MAJOR PHYSIOGRAPHIC REGIONS OF ALBERTA



I Canadian Shield

II Interior Plains

III Cordilleran Region

Scale 1 : 20,000,000

Fig. 3. Source: Atlas of Canada 1957, Plate 11.

physical environment which had to be faced by individuals in any specific locality.

The underlying geology is excluded from the discussion since mineral resources were relatively unimportant in attracting population to the area which later became known as Alberta. Coal occurs throughout the Province and was important for fuel for the expanding railway network after the turn of the century. It influenced the location of some settlements such as Drumheller, Canmore and Lusco, and reference is made to these places in a later chapter. Outcropping coal was sometimes an added attraction to settlement where wood for burning was not available. The development of oil and gas took place after 1931 and it is discussed later in the study. Because agricultural settlement was so important in the growth of population, aspects of the physical setting most obviously affecting agriculture are considered in this section.

Landforms

Landforms were not considered a major impediment to settlement east of the Rockies. In the northeast corner of the Province is a rocky plateau marking the margin of the Pre-Cambrian Shield (Fig. 3). In the west the Province is bounded by the Rocky Mountains. They illustrate major folding, faulting and mountain glaciation in a spectacular fashion. On their flanks rolling foothills rise to more than 5,000 feet and slope gently towards the east. The remainder of the Province is made up of plains of limited relief. There is a general decrease in elevation towards the Alberta-Saskatchewan boundary. While local relief is not great there are

MEAN ANNUAL PRECIPITATION IN INCHES

MEAN ANNUAL NUMBER OF FROST FREE

DAYS



Scale 1:10,000,000

Fig. 4. Source: Atlas of Canada 1957, Plates 23, 25.

hindrance to settlement in all but the western fringes of the Province.

Climate

Climate has been of outstanding importance in influencing settlement (Fig. 4). It has been said that rainfall deficiency is perhaps the most important single factor in the life on the Canadian plains. It divides the history of settlement into 'good' and 'bad' years, and it has been the chief conditioning factor of agricultural practice.⁶

Precipitation averages less than 12 inches annually in the dry southeast part of the Province, and in the north. It increases in the mountain area along the western border to over 50 inches. In much of the central part of the Province, which is also an area of relatively dense agricultural settlement, amounts range from 12 to 20 inches. Recorded amounts of precipitation are not so important to much of the population as is its efficiency, and this must take into account such factors as the amount received during the growing season and evapotranspiration. In the lowland part of the Province potential evapotranspiration ranges from 20 to 24 inches giving an average deficit of almost 12 inches in the driest parts to 4 to 6 inches in the more humid areas.⁷

⁶ Ibid., p. 14.

⁷ A.H. Laycock, "Drought Patterns in the Canadian Prairies." From Publication No. 51 of the International Association of Scientific Hydrology, Helsinki, 1960, p. 35.

Intensity of drought and its regional patterns change from year to year, and the general effects are widely apparent in land use, and suggest where farming is least reliable without the use of dry farming or irrigation. Although irrigation is of great importance in the southeast part of Alberta its value often is not realised to the full. In a large part of the irrigated area the farming population prefers to risk receiving sufficient summer rain to ensure fair crops rather than to go to the expense and effort connected with irrigation.

In the northern part of the Province precipitation is low, but this is not so important in considering the area's suitability for supporting a dense farming population as is the frequency and duration of frosts. But in this connection rapidly maturing strains of grains have made arable agriculture possible in many northern locations where soils and other conditions were favourable to its development. There is great variation in the length of the growing season in different parts of the Province. In the south it is particularly long.

The northward extension of warmer average temperatures than those at similar latitudes further east is marked by a similar extension in the settled area of Alberta. Mean annual temperatures vary from 25°F in the north to 40°F in the southeast, although winter temperatures below zero and summer temperatures of 65-80°F are common in much of the Province. The Peace River area is warmer than might be expected at its latitude of more than 55°N and this has been important in encouraging settlement.

Problems connected with the amount and seasonal variability of precipitation and the length of the frost-free period have been of continuing importance to many people in Alberta, especially farmers.

Insufficient knowledge of these climatic characteristics has been responsible for considerable changes in the population history of certain parts of the Province. For example, in the semi-arid south-east settlement spread in wetter years unaware of the difficulties which drought would bring. The reduction in numbers after a period of dry years is striking.

Vegetation and Soils

Climate was not the only unfamiliar part of the new environment for most immigrants. Vegetation shows a close relationship to precipitation and the length of the growing season and ranges from short grass prairie in the southeast to tundra in the north (Fig. 5).

The short grass prairie is part of Palliser's triangle, and precipitation ranges from 15 inches to 11 inches in the most arid part. The vegetation is varied from a sparse cover of desert plants with widely searching root systems, through short grasses to tall prairie grasses along the northern margin. Encircling the 'true prairie' is a crescent of mixed-grass prairie and moister parkland or fertile tall grass land with patches of trees, and often continuous woodland along river valleys. An isolated area of this kind is found in the Peace River district. The southern part of the forested zone is the mixed wood belt in which several characteristic associations of deciduous broad-leaved trees and evergreen conifers are found. Further north trees of the coniferous forest are smaller and of little commercial value. The eastern slopes of the Rockies support some conifers not found widespread elsewhere in Alberta.

The prairie and parkland attracted settlers more than the

SOIL ZONES OF ALBERTA

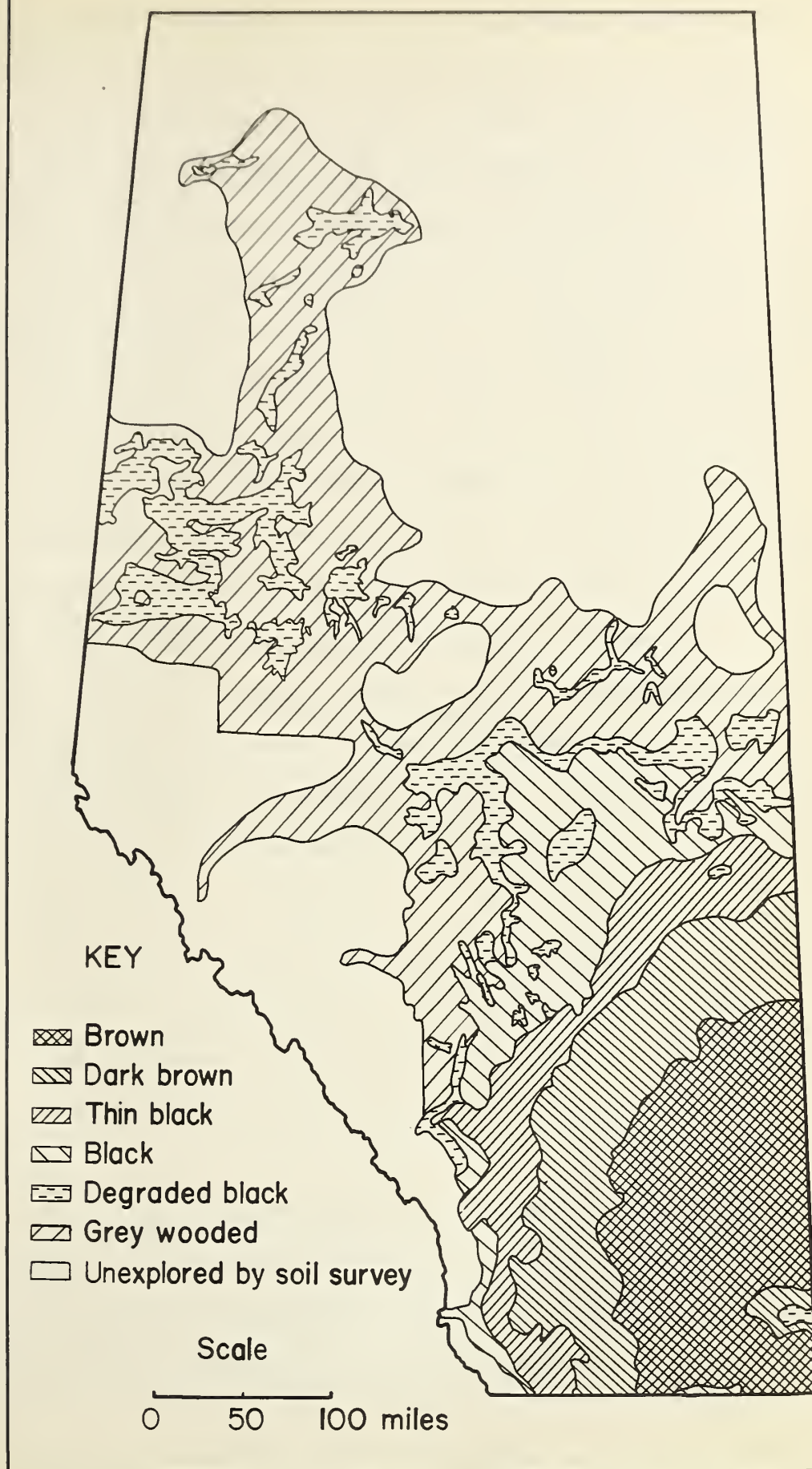


Fig. 6. Source: Alberta Soil Survey, Wm. Odynsky, 1954.

wooded areas mainly because of the ease of clearing for agriculture. The density of population associated with agriculture was greater than that associated with forest uses. Locally vegetation was used as an indicator of soil fertility and was important in the choice of farm site, before soil analysis became common practice.

There are five major soil zones (Fig. 6). Prairie soils are dark brown changing to greyish brown with increasing aridity. Development under grass cover has built up a deep humus layer and because of scanty rainfall leaching is minimal. A layer of lime is often quite close to the surface. The nitrogen content is not so great as in the parkland soils. The more arid parts are best suited to ranching, although yields from irrigated agriculture can be high. Population density differs notably with each of these uses. Exhaustion of organic material and soil drifting are common results if over-grazed or over-cultivated, and in some areas initially large numbers of settlers have dwindled leaving a low population density. The dark brown soil is more productive than the brown soil zone and has a greater moisture retaining capacity.

The very dark brown or black soils developed under tall grass in areas with more than 15 inches of precipitation are the most fertile and most densely populated soils in Alberta. They are deep, rich in organic matter, and have a layer of lime well below the surface.

In the area of grey-wooded soils humidity of the air is greater, air temperatures are lower and the growing season is shorter. This type is thin and although developed in a generally mixed forest area muskeg is characteristic of locally inadequate drainage. Much of this area

tends to be marginal for agricultural settlement, and is marked by low population densities.

The lack of uniformity in soil development should be stressed. The soil map is generalised and all the variations in soil development, resulting from glaciation, for example, are now shown. Glacial lakes, moraines and other glacial features have influenced soil texture which ranges from boulders to clay.

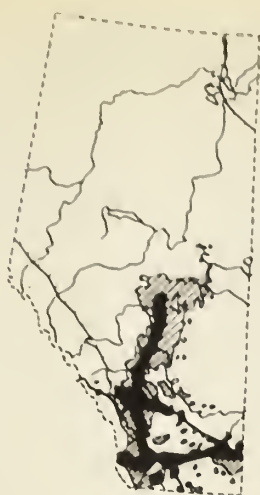
Variations in soils are of great importance in the potential capacity of an area to support a farming population. Even such a general idea of soil distribution as that given above was not available to the early settlers. Indication of soil fertility given by vegetation was used to some extent but only experience brought the knowledge which later settlers could consult before clearing new land.

RAILWAYS AND SETTLEMENT

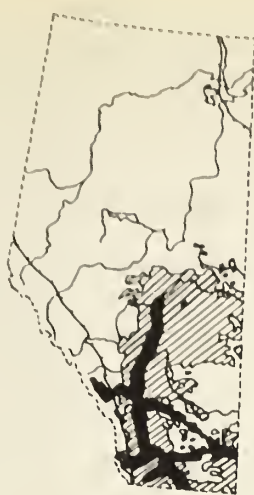
The first extensive settlement of the Province was agricultural, and the ability to assess the new environment was of the greatest importance to individual settlers. However, the practical problem of selecting specific areas favourable for settlement and within satisfactory distance of markets was of overwhelming significance. The extension of settlement was closely related to the development of communications and transport, especially the railways.

Callendar, in the Economic History of the United States, has discussed the economic life of colonies thus:

The most important feature of economic life in a colony or newly settled community is its commercial connection with the rest of the world. Upon this more than on any other circumstance depends its prosperity . . . progress does not take place unless the colony possesses markets where it can dispose of its staple products. The history of modern colonization does not show a



1901



1906



1911



1916

KEY

■ Occupied area within 10 miles of a railway

▨ Occupied area over 10 miles from a railway

— Railways outside the occupied area

— Eastern margin of the Rocky Mountains

— Western margin of the Precambrian Shield



1921



1926



1931

Scale

50 0 100 miles

ACCESSIBILITY TO RAILWAYS

Fig. 7. Source: W.A. Mackintosh, Prairie Settlement, Vol. 1, pp. 49-52.

single case where a newly settled country has enjoyed any considerable economic prosperity, or made notable social progress without a flourishing commerce with other communities.⁸

The pioneer fringe is in effect a "newly settled community" and it too must achieve an export staple and the means to transport it to markets.

Before railways were built settlement was associated with waterways and trans-shipment points. Around some trading posts such as Fort Edmonton some farming was undertaken, but the limited area cultivated satisfied only local demands. Railways were as important as climate and soil in Canadian prairie agricultural settlement. Often the railways were not built to reach the population, but people settled where they expected railways would be built. The influence of accessibility is evident when the progress of railway building is compared with that of settlement.

By 1901 (Fig. 7) the main Canadian Pacific Railway line was in operation, and also the Company's branch line from Calgary to Edmonton. Until 1906 railway building was not very active and settlement spread over a large area. For example, east of Edmonton many people were more than twenty miles from a line, and grain was hauled up to fifty miles to a railhead. Much of the settlement was based on the hope that construction was bound to come to good land.

There was continued increase in the length of lines built between 1906 and 1911, but settlement still outpaced this expansion as much of the semi-arid part of the Province was occupied.

The number of branch lines and the number of lines crossing the Alberta-Saskatchewan border increased from three to seven over

⁸ G.S. Callendar, Selections from the Economic History of the United States 1765-1860, Boston, 1909, p. 6.

the period 1911 to 1916. The settled area more than twenty miles from a railway was progressively reduced by these developments. At the same time many people moved into the Peace River area despite the absence of a rail link with the rest of the Province.

Railway construction was not so active during the first World War although Alberta probably experienced more changes than the other prairie provinces. The Peace River country, settled previously, was linked to the areas in the south by 1921, but the line brought few new immigrants and growth of settlement was slight.

From 1916 to 1931 branch line construction continued and more of the settled area was brought within a twenty-mile distance of a line. The low prices for wheat between 1921 and 1926 did not encourage expansion, but by 1931 the steady increase in railway mileage had left only forest reserves, Indian reservations, 'badlands' and some sparsely populated semi-arid land more than ten miles from rail transport facilities. Agricultural areas were well served and the railway companies found that this was to their advantage.

Since 1931 the effects of transport facilities have continued to be important in the settlement pattern of the Province. The increased ease and speed of truck haulage as opposed to horse-drawn transport has meant that grain can be grown economically at a greater distance from the railway lines. Other factors which have been important in influencing the pattern of settlement are the fluctuations of grain prices, diversification of the agricultural economy and increasing employment in mining and other industries. These have had far reaching effects but it is still true to say of parts of the Province

that

What the birch bark canoe was to the fur trader the railway is to the farmer of western Canada. Beyond the end of steel there is only such settlement as waits month by month and year by year for the coming of the railway.⁹

⁹ Mackintosh, op. cit., p. 57.

POPULATION GROWTH IN ALBERTA 1901-1931

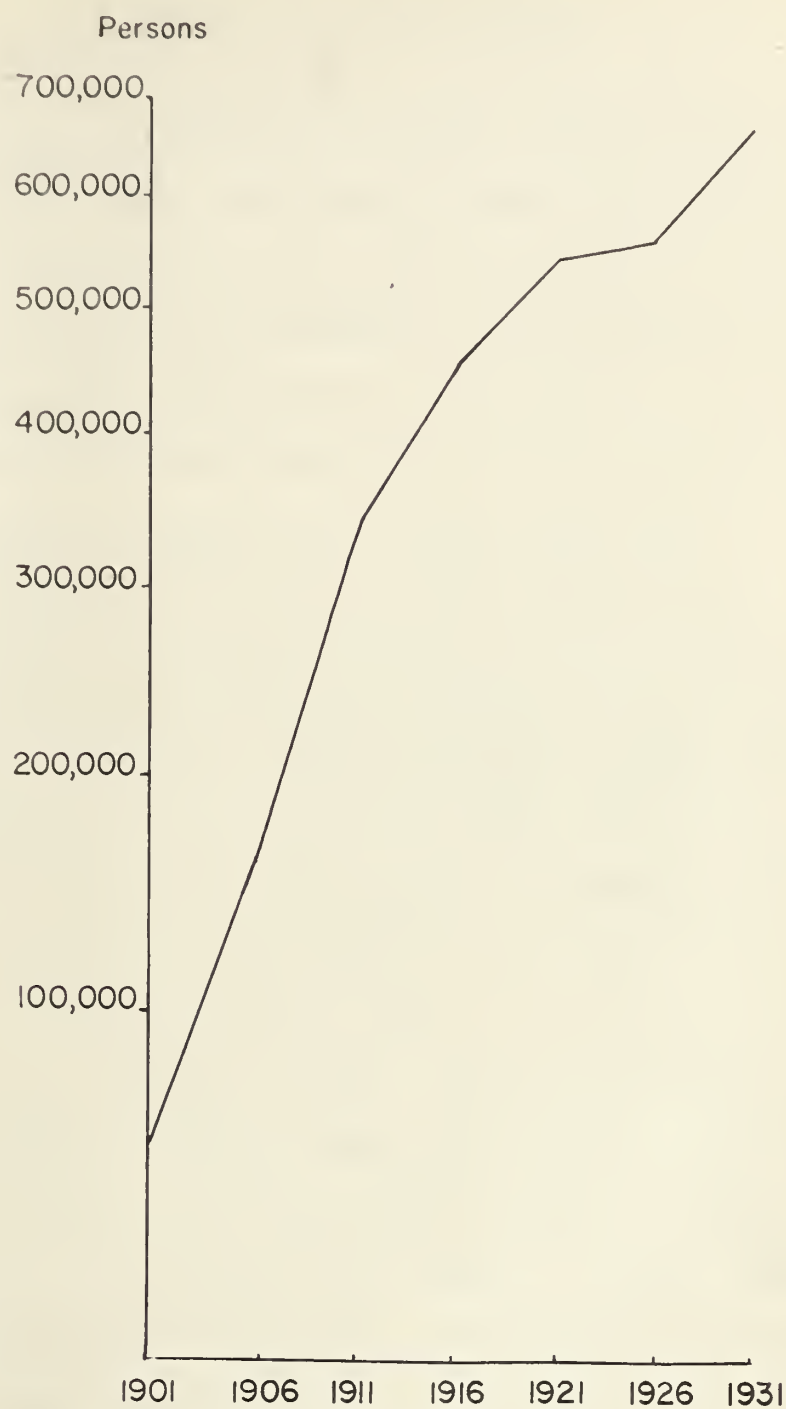


Fig. 8. Source: Census of Canada

CHAPTER II

THE GROWING POPULATION OF ALBERTA

This chapter is divided into two parts. The first part deals with the years before 1931. The second part deals with the years 1931 to 1961, the thirty-year period on which the study is focussed.

In each of the parts the amount and rate of population increase, the contributions made to the totals by natural increase and immigration, the age-sex structure, and the urban-rural ratios are treated briefly.

THE CHANGING POPULATION OF ALBERTA BEFORE 1931

The greatest rate of population growth was between 1901 and 1911 (Fig. 8); population increased from 73,022 to 185,195 between 1901 and 1906, and increased to 374,295 in 1911. Percentage increases in population were 153 per cent and 102 per cent. These increases were mainly related to the arrival of large numbers of immigrants. Up to 1906 settlement was mainly in the parkland and tall grass prairie areas, rather than in the driest non-wooded country. By 1911 farmers had settled almost all of Palliser's triangle sparsely and movement of population began to the Peace River country, the settlement of which had been discussed frequently before that time. Density of population was increasing in the earlier settled areas although, as might be expected in areas of rapid settlement, there was a broad fringe of settlement with a low population density.

During the period 1911 to 1921 population grew at a slower rate.

Totals were 374,295 in 1911, 496,442 in 1916, and 588,454 persons in 1921. Respective percentage changes in numbers were 32 per cent and 18 per cent which were very much smaller than in the preceding decade. There was increasing density of population throughout most of the area, especially in the Peace River country. The Edmonton, Dunvegan and British Columbia railway, now the Northern Alberta Railway, had been built, and acted as a stimulus to settlement. While wartime prices for wheat were high expansion continued, especially on the fringes of the dry area.

Between 1921 and 1926 there was a marked decrease in the rate of population growth. Although there was still an increasing population in the Province as a whole, rising from 588,454 to 607,599 persons or an increase of just over 3.0 per cent, the contrast with earlier periods is striking. From 1920 to 1923 wheat prices decreased and crops were poor. The fringe area of southeastern Alberta experienced widespread farm abandonment. The census of 1926 indicates that 55 per cent of the farms in this general area were abandoned.¹ Most of the increase took place in the park and forest belts.

From 1926 to 1931 there was an increased rate of growth in the Province similar to that of 1911-1921. Population increased 20 per cent, from 607,599 to 731,605; a relatively large proportion of this increase took place in the Peace River country where settlement spread into the lightly wooded areas.

¹ W.A. Mackintosh, Prairie Settlement, Toronto, 1954, p. 74.

Population Growth and Natural Resources

In recapitulating some of the adverse physical factors affecting density of settlement in the Province scanty precipitation, forest growth, poorer soils and short growing season might be singled out for special attention. There is a clearer link between low rural population densities and areas with low precipitation in the growing season than that between population density and meagre annual precipitation. The isopleth for a growing season with 160 days over 42°F tends to coincide with the northern limit of wheat production, and beyond this population densities are low. Surface configuration is not a major limiting factor for arable farming over most of the area. However, a short growing season, expensive labour and a predominance of spring wheat make concentrated effort at seeding and harvesting time imperative, and farm machinery operates most easily on level land. As might be expected a combination of factors influences land use and population density. For example, an area with inadequate rainfall may have varied agricultural use and capability for the support of population depending on the degree to which its soil can retain moisture.

Unfavourable elements of the physical environment when understood have been offset to some extent by farming methods adapted to local conditions; dry farming techniques and irrigation in the southern part of the Province are examples.

Irrigation had been undertaken locally on a small scale since 1899. By 1925 the Canadian Pacific Railway had constructed over 4,000 miles of ditches, four-fifths of the provincial total, and the irrigable acreage had increased to over one million. Only a quarter of a million

acres were in fact irrigated, mainly because the availability of irrigation waters was treated by the farmers more as a form of insurance than as an absolute necessity since drought was not consistently severe enough to prohibit growth completely.

Irrigated agriculture, which is able to support more persons and farms per square mile than ranching, has affected the settlement pattern and density of population. This type of farming has permitted the expansion of settlement into areas which otherwise would have been much less productive and would have supported many fewer people. Although it may compensate for meagre precipitation, still there may be significant farming problems connected with soils and transport.

Many of the settlers came to the Province obsessed with the idea of grain growing, since the fame of the Canadian prairies as a potentially rich and fertile farming area had spread abroad. After about 1915 when administrative services became better organised in the Province diversification of agriculture was encouraged by the Government, and emphasis was placed on the improvement of the quality of livestock in those areas where it was already of importance. Numbers of cattle, sheep, swine and poultry increased especially in the parkland and forested areas. Fluctuating prices for grain reinforced the wisdom of this policy. Land use planning of areas still unsettled, a precaution which may have prevented disastrous experiments, received more attention as the period progressed. Coal mining and forestry were of some importance until 1931 but did not attract as many people as agriculture.

Thus the physical environment, transport, and the availability of markets undoubtedly affected settlement and population density.

RESERVATIONS FOR FRENCH SPEAKING AND
NEW CANADIANS ALBERTA 1901



Fig. 9. Source: W.D. Morton, History of Prairie Settlement, p. 97.

However, population density may have been affected by the social characteristics of different groups, not necessarily because their farms were smaller but because families of settlers of European origin were often larger than those of settlers of British origin. The latter have always been dispersed throughout the Province. The reservations which were set aside for certain European groups - 'new Canadians' - in the last years of the nineteenth century (Fig. 9) although short-lived can still be traced in the present day distribution of population.²

Contributors to Population Growth

Immigration and natural increase³ are responsible for population change in the Province. In addition to other aspects of population geography it is necessary to know where the immigrants came from, to what extent they settled in urban groups, the structure of

² In 1892 a French colony including settlers from Quebec, Michigan and Belgium was established around the present site of Morinville. In 1893 another French colony was started east of Leduc. From 1891 to 1894 fourteen German settlements were established within easy reach of the Calgary-Edmonton railway. These were at Hoffnungen west of Leduc, at Rosenthal west of Edmonton, on a large reservation at Wetaskiwin, at Rabbit Hills south of Edmonton, at Josephburg, at Beaver Hills, near Fort Saskatchewan, at Leduc, Dunbow southeast of Calgary, Bruderfeld south of Edmonton, and at a site west of Lacombe.

Between 1892 and 1896 six Scandinavian colonies were founded. These were: Edna, now Lamont, New Sweden east of Wetaskiwin, Olds, Swea on Swan Lake west of Red Deer, near Tofield, and at Stony Plain.

In 1891 an Icelandic colony was started south of Red Deer. In 1894 a Ukrainian group settled Limestone Lake. See A.S. Morton, History of Prairie Settlement, Toronto, 1938, p. 98.

³ Natural increase represents the difference between population gains from births and losses from deaths.

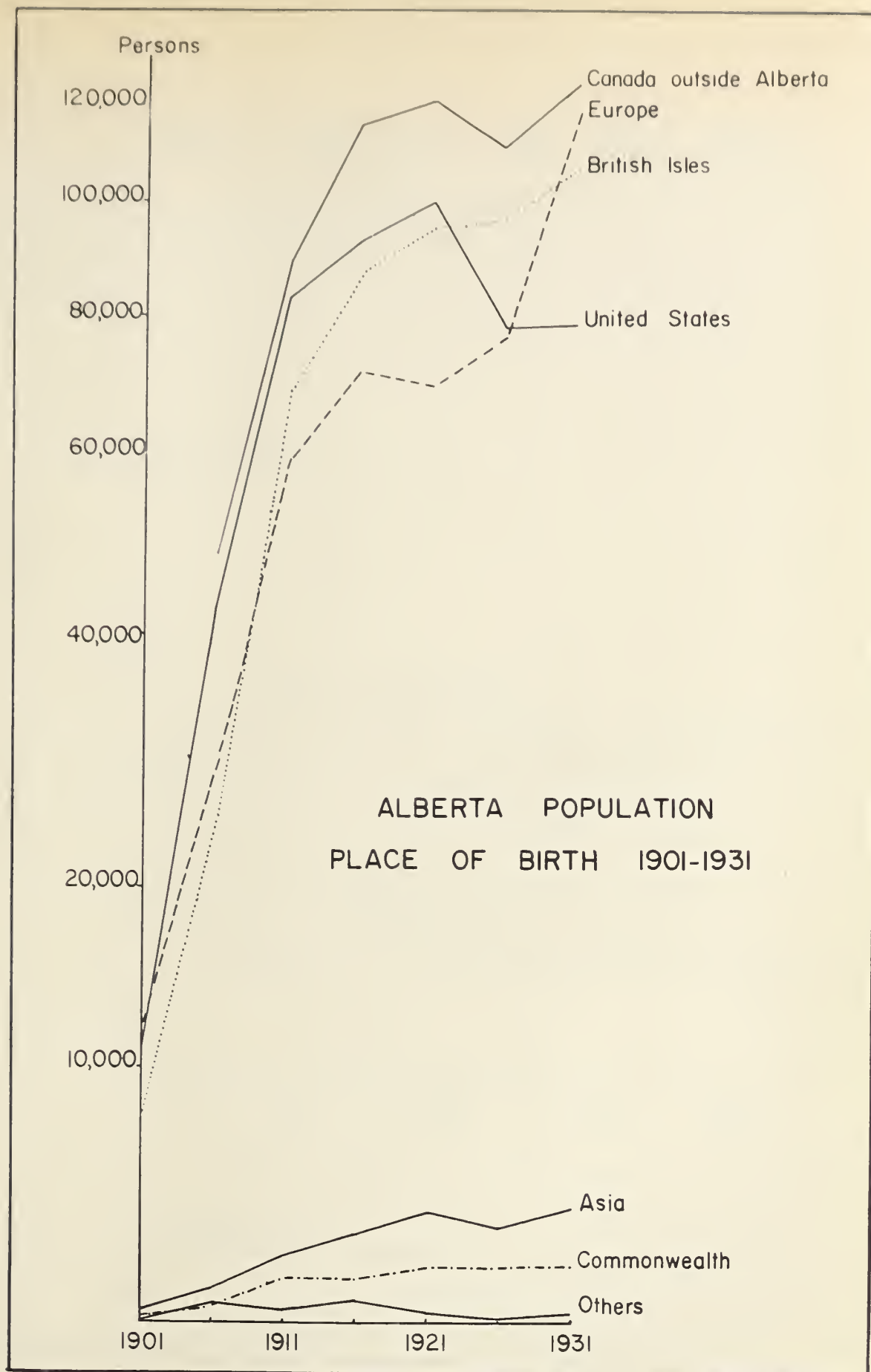
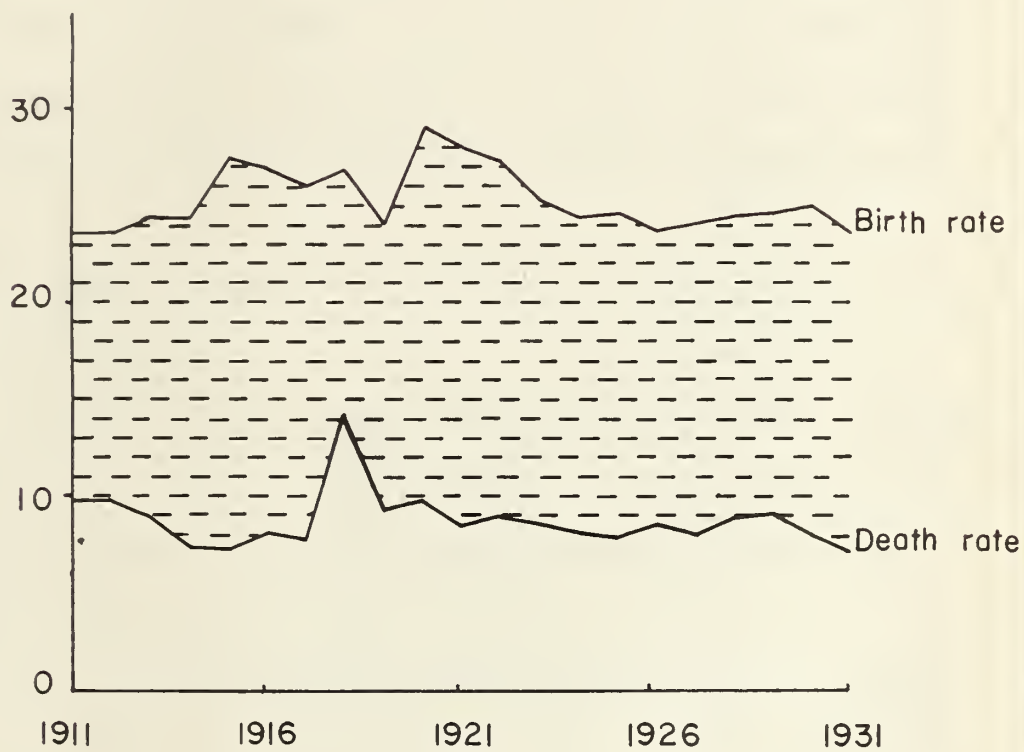


Fig. 10. Source: Census of Canada

ALBERTA - CRUDE BIRTH AND DEATH RATES

1911 - 1931

Number per thousand
population




 Natural increase

Fig. 11. Source: Canada Year Book

the population as a whole, and the degree to which the birth and death rates have fluctuated throughout the period for which statistics are available.

Many immigrants to Alberta have come from other Provinces in Canada (Fig. 10). The United States, British Isles and European countries have also made significant contributions to the increasing totals. Settlers from each of these areas make up similar proportions of total immigration in most years before 1916. From 1916 to 1921 numbers of persons of European origin were substantially smaller. In 1926 there were fewer people entering the area from the United States and other parts of Canada than in 1921. In the five years from 1926 to 1931 an increased number claimed each of the areas mentioned as birth-place although the increase in those from the United States was very small.

The number of immigrants into Canada who gave Alberta as their intended destination in the years up to 1931 also shows the contrast in numbers before and after 1916. The illustrations give no indication of the numbers of persons leaving the Province, but it is obvious that immigration must have been influential in population growth during the period.

Natural increase is also an important contributor to growth. In the period from 1911 to 1931 the death rate first fell (Fig. 11), but during the first World War there was an abnormal though not unexpected rise. The war also caused unusual fluctuations in the birth rate which rose steadily at its beginning and end but decreased during the period of hostilities. There was a steady rise after 1920 when servicemen returned and more normal conditions were restored.

URBAN RURAL PERCENTAGE DISTRIBUTION
OF POPULATION ALBERTA 1901-1956

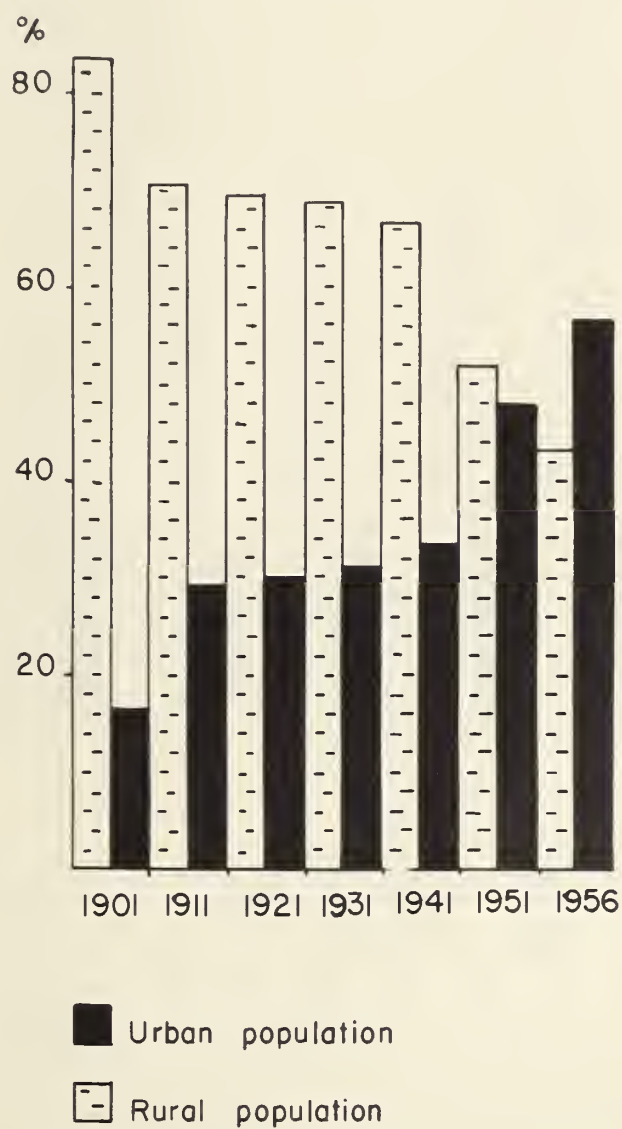


Fig. 12. Source: Census of Canada 1956. Analytical Report Bull. 3-2, p. 2-26.

PERCENT OF TOTAL POPULATION IN INCORPORATED URBAN SETTLEMENTS

ALBERTA 1901-1931

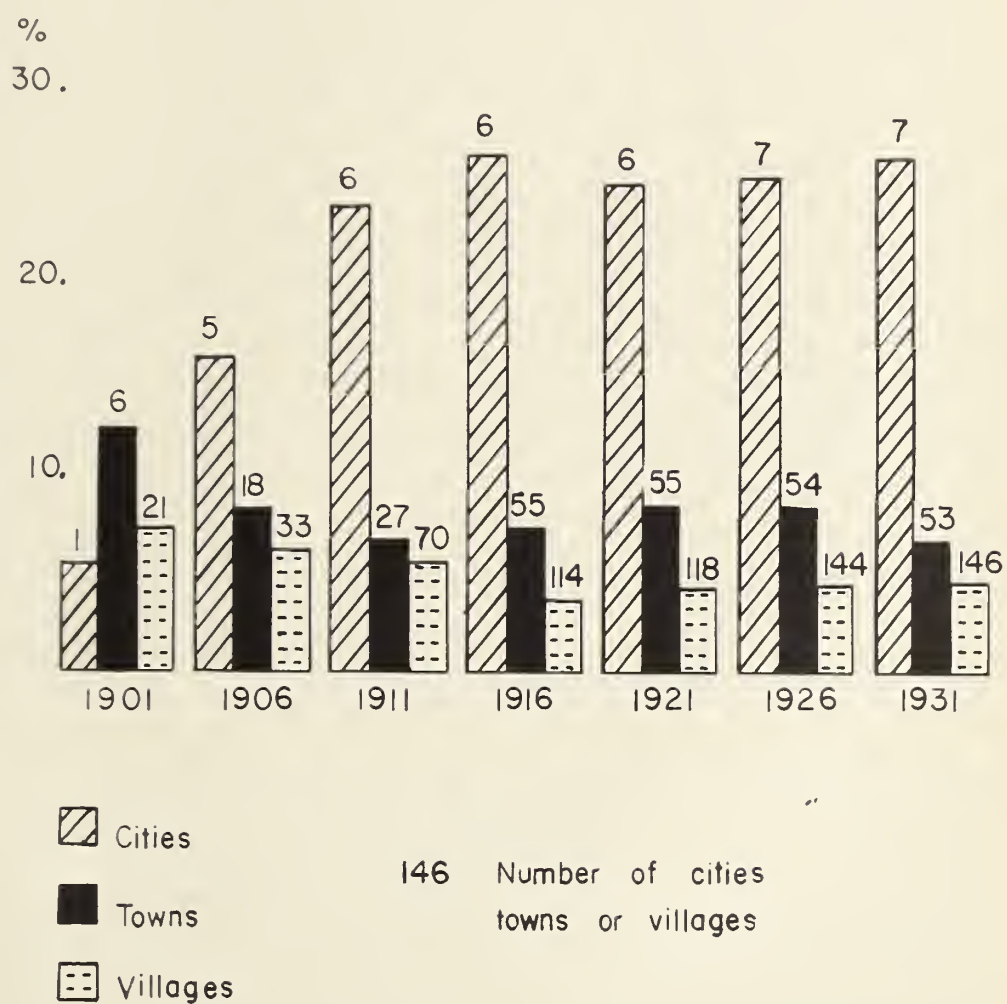


Fig. 13. Source: Census of Canada

POPULATION CHANGE IN ALBERTA

1931 - 1961



Fig. 14. Source: Census of Canada

Changing Rural-Urban Ratios and Sex Ratios

The population was predominantly rural at the beginning of the period under discussion (Fig. 12). Throughout the years before 1931 urban dwellers were steadily increasing in number while rural population suffered a relative decline. The distribution of urban dwellers between cities, towns and villages⁴ has varied (Fig. 13). Although there was a greatly increased number of villages, and to a lesser extent of towns, at the end of the period villages accounted for only a small percentage of the population. Cities had a steadily increasing percentage of the total population especially up to 1916. The more spectacular changes which took place between 1931 and 1961 will be discussed later. In Alberta up to 1931 only Edmonton, Calgary, Lethbridge and Medicine Hat had populations of over 5,000.

Thus in the course of less than a century the Province of Alberta changed from an almost uninhabited area to one with a population of 731,605 mainly supported by agriculture and the processing of agricultural products. During the same period changes in the age and sex structure of the population, and a trend towards increasing urbanisation became apparent.

THE CHANGING POPULATION OF ALBERTA 1931-1961

Population change from 1931 to 1961 can be divided into two main phases (Fig. 14). Before 1946 rates of growth were comparatively

⁴ In the census reports of the period before 1931 settlements with at least a group of thirty-five separate buildings each occupied continuously as a dwelling for at least a month were designated villages. When any village had more than 700 inhabitants it was designated a town, while a city had to be incorporated by special Provincial act.

NUMBER OF IMMIGRANTS TO CANADA DESTINED FOR ALBERTA

1901-1961

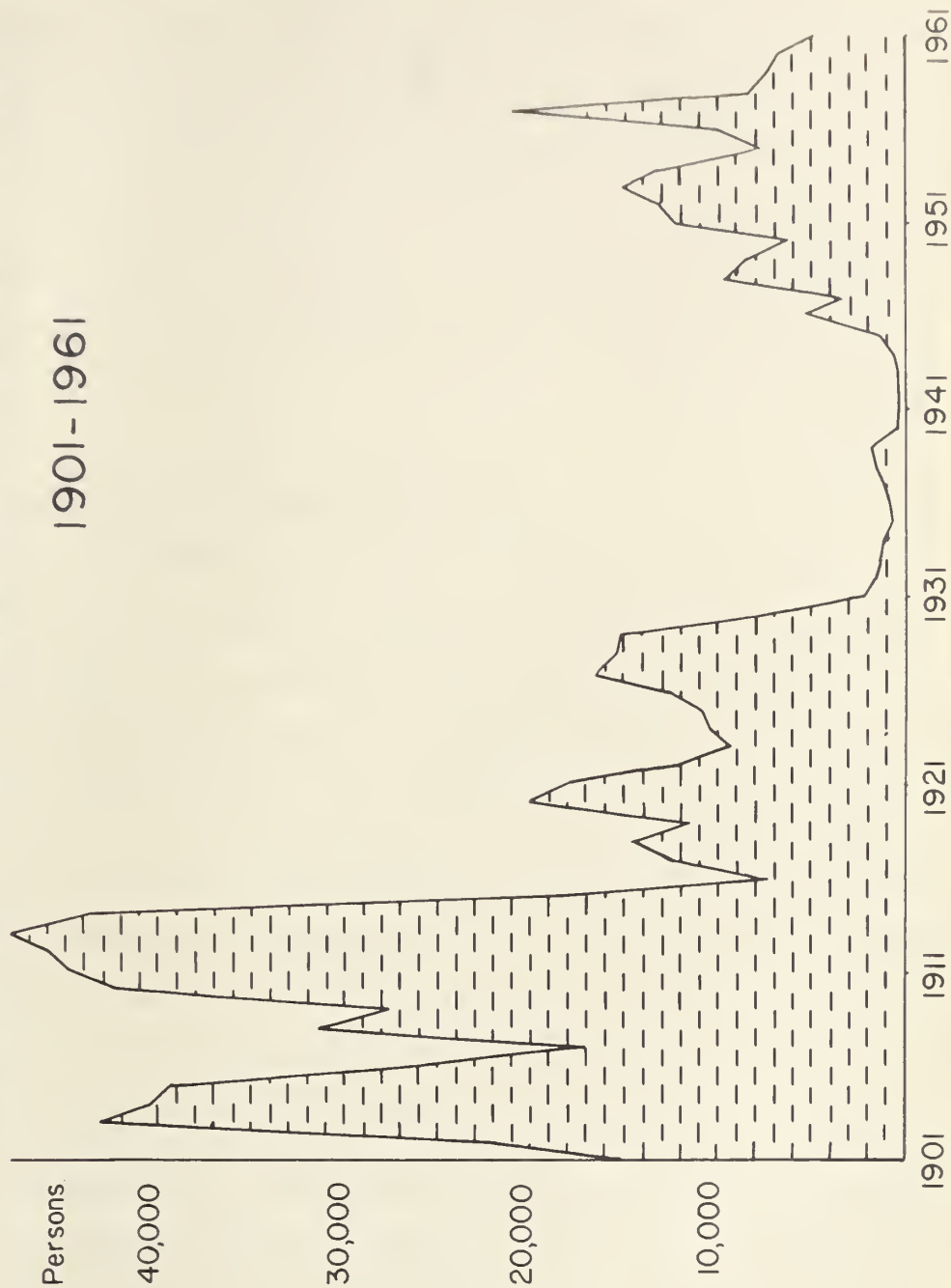


Fig. 15. Source: Canada Year Book. Annual Report of Dept. of Citizenship and Immigration.

slow, especially between 1941 and 1946 when intercensal estimates indicated that there was actually a decrease in population between 1941-1942 and 1945-1946. From 1946 until the present there has been a steady, rapid growth which is apparently still continuing although a little more slowly than before. According to the 1961 Census the percentage increase since 1956 was 18.6 per cent as compared with 19.5 per cent between 1951 and 1956. The increase of almost 42 per cent in the last decade was the greatest shown by any province in Canada.

Contributors to Population Growth 1931-1961

During the period 1931 to 1961 population continued to be affected by natural increase and immigration. From 1931 to 1936 the numbers of immigrants into Canada destined for Alberta were very small and did not exceed 2,000 annually while during several of the years before 1931 over 40,000 entered the Province (Fig. 15). The reasons for this decrease seem to have been the world-wide depression, and for later decreases the Second World War. Again it should be stressed that emigration figures are even less satisfactory than those for immigration, so that a complete and accurate picture of the movements of population is very difficult to achieve - only trends may be suggested. After the Second World War immigration increased and with it the numbers of persons intending to settle in Alberta. Peaks such as those reached in 1903 and 1910-1915 have not been experienced again, mainly because much of the formerly empty potential agricultural land has been settled. With the exception of 1957 during the last decade the numbers of immigrants to the Province increased.

ALBERTA - CRUDE BIRTH AND DEATH RATES 1931-1959

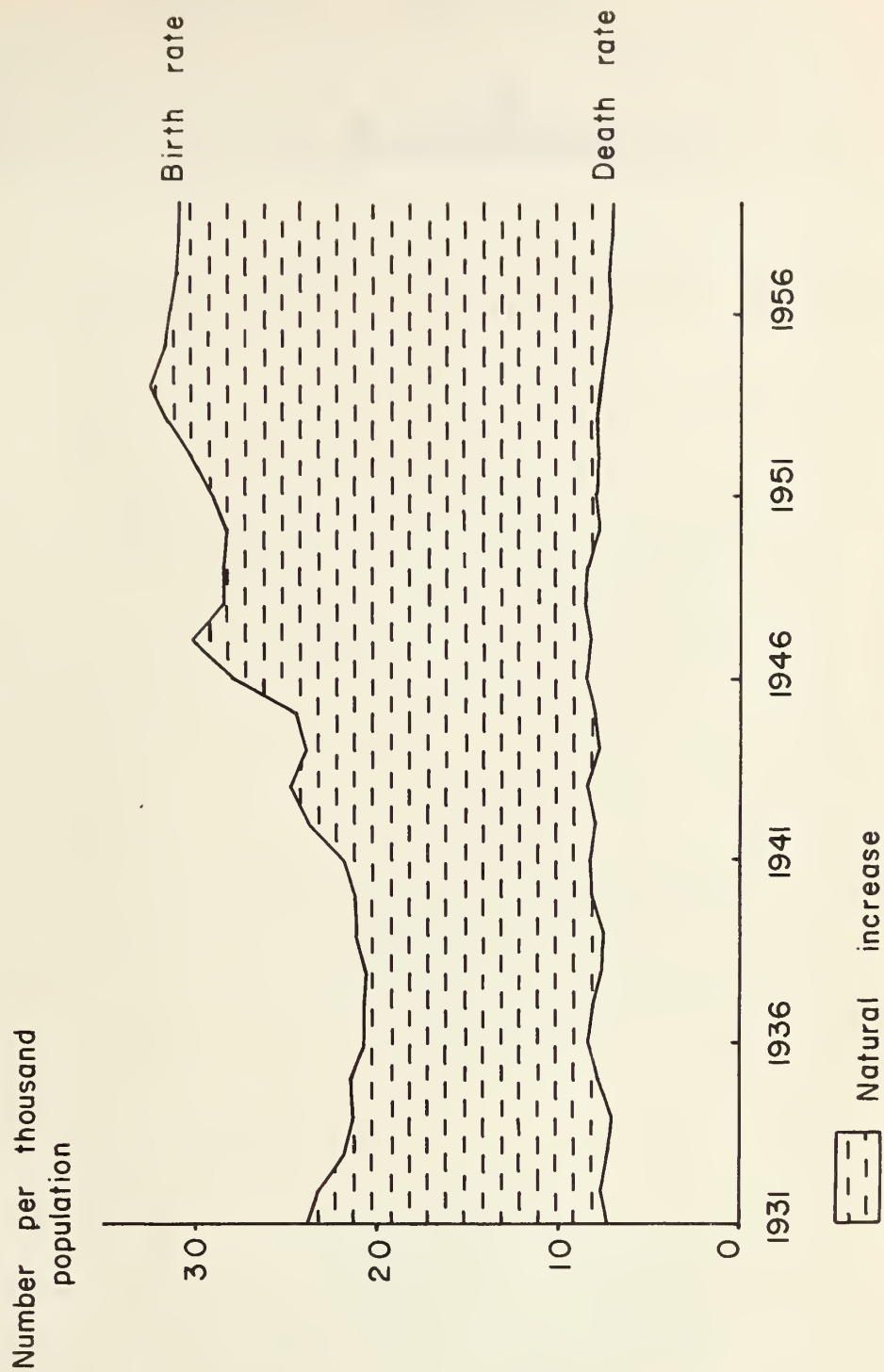


Fig. 16. Source: Canada Year Book.

PERCENTAGE DISTRIBUTION OF POPULATION BY AGE GROUP AND SEX ALBERTA 1901-1956

Age groups

70+

65-69

55-64

45-54

MALE

FEMALE



were high. The smaller numbers of young children at the beginning of

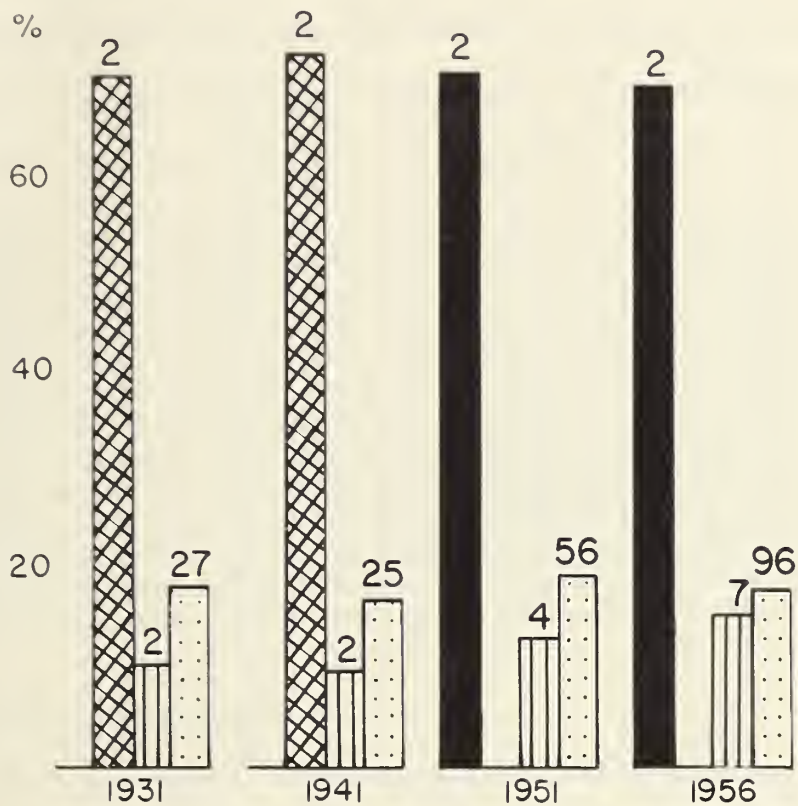
Reduced immigration was not the only cause for a smaller rate of growth after 1931. From 1930 until 1938, with the exception of the year 1935, the birth rate fell steadily from twenty-five to just over twenty live births per thousand population. The death rate fluctuated from seven to just over eight per thousand. While natural increase was still substantial it was at its lowest for any period of years in the history of the Province (Fig.16). With the exception of a short period during the Second World War later increase is no doubt associated with the rise in the birth rate especially since 1945. Death rates remained low throughout the period and natural increase has been most important in the recent rapid growth of population in the Province.

From 1950 to 1954 birth rates increased to the unprecedented thirty-two live births per thousand population. This was during a period of general economic prosperity with which a rising birth rate is often associated. From 1954 until 1959 the rate fell slowly although it remains over thirty live births per thousand. It might be concluded, then, that natural increase, not immigration, has been responsible for the continued increase in the provincial population totals since 1931.

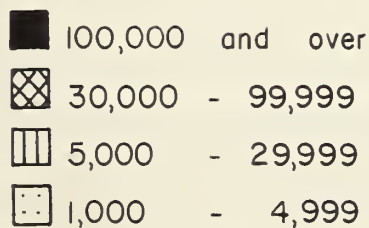
The structure of the provincial population shows a continuation of the previous trend towards increasing numbers of persons in the over 65 age groups (Fig.17). Fewer children than might be expected were born between 1931 and 1941, and this lowering of the birth rate is apparent in the age structure of the population. The young age groups showed a marked increase between 1951 and 1956 when the birth rates were high. The smaller numbers of young children at the beginning of

ALBERTA 1931-1956 PERCENT OF URBAN POPULATION

INCORPORATED SETTLEMENTS BY SIZE GROUPS



Persons



89 Number of settlements

Fig. 18. Source: Census of Canada 1956. Analytical Report. Bull. 3-2, pp. 2-27.

the thirty-year period will probably affect briefly the rate of natural increase in the 1960s.

Throughout the period the working age groups were large and showed some relation to the numbers of immigrants arriving, because many of the immigrants tend to be between the ages of twenty-five and thirty-five years.

Between 1931 and 1956 the trend towards urbanisation continued with increased momentum (Fig. 12). Mackintosh, after studying the trends in the Prairie Provinces up to 1931 suggested that

The extension of the agricultural area, the substitution of mixed farming for grain growing, and the high rates of natural increase among the non-Anglo-Saxon population are factors favourable to an increase in rural population. The extension of mechanization and the increasing size of farms throughout almost the whole region are factors limiting such an increase. As markets for the products of the mixed farms are not likely to be extended rapidly, as the area of suitable land open to settlement is not large, and as the size of farms on the Canadian plains is still considerably less than that in the corresponding parts of the plains of the United States, it is likely that further increases in the rural population of the prairie provinces will be small and that in the near future decline may succeed increase.⁵

The Changing Urban-Rural Ratio

In 1956 the majority of the population was classed as "urban" or as dwelling in incorporated urban centres. The factors mentioned by Mackintosh in the above quotation had undoubtedly been operative, although he did not discuss the increasing importance of industrialisation. In spite of the increased numbers in the centres with sizes from 5,000 to about 30,000 the percentage of the population living in these centres has not changed greatly in the period under discussion (Fig. 18). The greatest change came between 1941 and 1951

⁵ Mackintosh, op. cit., p. 202.

when there was a startling increase in the number of people living in the two large centres of Edmonton and Calgary. These two cities experienced exceptionally rapid growth as service and industrial centres. Some of the increase in urban population is due to redefinition of boundaries, but the general trend remains unaffected.⁶

Edmonton and Calgary are outstanding among Canadian cities. In most large urban centres the greater part of the growth has taken place in the fringe or suburban areas as a result of natural increase, as well as by net migration.⁷ In 1951 in Edmonton and Calgary net migration was more important than natural increase in both city and

⁶ Detailed study of the progress of urbanisation is difficult because of the changing definition of terms used in the Census, boundary changes in urban areas through annexation of surrounding land, and the fact that rural communities have grown to over 1,000 persons and thus must be classed as urban. Before 1951 the division between rural and urban was based on population size or the form of administrative organisation, or both. Thus, any incorporated settlement, no matter what its population, was classed as urban, and agglomerations which were often much larger in numbers but unincorporated were rural for census purposes. After 1951 size was chosen as the criterion on the basis of which rural and urban populations were to be distinguished, recognising that such division is arbitrary but believing that size is closely related to the type of social and economic organisation likely to develop, and that the larger the community the more urban its activities are likely to be. Thus in 1951 all places with a population of 1,000 or more were classed as urban regardless of the fact that they were, or were not, incorporated. An attempt was made to include suburban areas and the expanding fringes of cities as urban. Canada, Dominion Bureau of Statistics, Census of Canada 1956. Analytical Report: Rural and Urban Population, Ottawa, 1958.

⁷ Net migration represents a balance between the numbers of persons moving into and those moving out of an area.

suburban areas (Table I). The cities showed a substantial increase

TABLE I - DISTRIBUTION OF POPULATION IN CALGARY, EDMONTON AND TORONTO
1951

Census Area	Metropolitan City		Actual increase	Fringe area		% of 1951 pop.	
	Natural increase	Net migration		Natural increase	Net migration	Natural increase	Net migration
Calgary	12.9	28.0	7,084	1,659	5,425	14.3	46.8
Edmonton	16.8	24.8	10,885	2,916	7,969	20.7	56.4
Toronto *	5.4	-6.5	248,606	44,543	204,063	10.1	46.2

* Toronto is included for comparison

Source: Census of Canada 1956, Analytical Report, Bull. 3-2, p. 18.

since 1931 reflecting the fact that they originally covered large, moderately populated areas which later were settled more closely. This was not the case in many cities in eastern Canada.

Thus it may be seen that urban change differs from the pattern of population growth as a whole in the Province, and from rural change mainly by its rapidity and the greater numbers of migrants contributing to urban increases in numbers.

CENSUS SUBDIVISIONS OF ALBERTA 1956



Fig. 19. Source: Census of Canada 1956. See Appendix IV.

CHAPTER III

SOME FLUCTUATIONS IN THE POPULATION OF CENSUS SUBDIVISIONS

IN ALBERTA, 1931-1961: ANALYSIS AND DISCUSSION

The graph (Fig.14) showing the growing population of Alberta is familiar, but the tremendous local variations which occur in different census subdivisions are less well-known, or perhaps only suspected. At the outset it should be noticed that during the period under discussion (1931-1961) boundaries of census subdivisions and also of major divisions changed several times. Since changes were carried out to give a more realistic picture of population distribution, the latest, 1956, framework has been used.¹ The location map (Fig.19) shows the fifteen census divisions and 105 census subdivisions currently in use. Indian Reserves have been excluded, and their fluctuating populations are considered in the appendix.²

This chapter deals briefly with census subdivision changes in

¹ Data up to 1946 are based on the seventeen census divisions of the Province. From 1946 until the present census data refer to fifteen census divisions. Almost all census subdivision boundaries were changed after 1946. Using data for townships from 1931-1946, totals were calculated for the fifteen divisions in use in 1956 so that comparisons could be drawn between any two census years in the thirty years.

² Since 1924 an Indian census has been taken at five-year intervals by the Indian Affairs Branch of the Department of Citizenship and Immigration. Unfortunately these years fell midway between regular census years e.g. 1924, 1929. The Dominion census does not give any detailed information by individual reserves so that adjustments related to the subdivision boundary changes are difficult to make. The numbers of Indians are small although significant enough to be discussed separately. Many of the reserve areas are so small that they have been omitted from the maps. The two which appear on the maps of the census of Canada are shown.

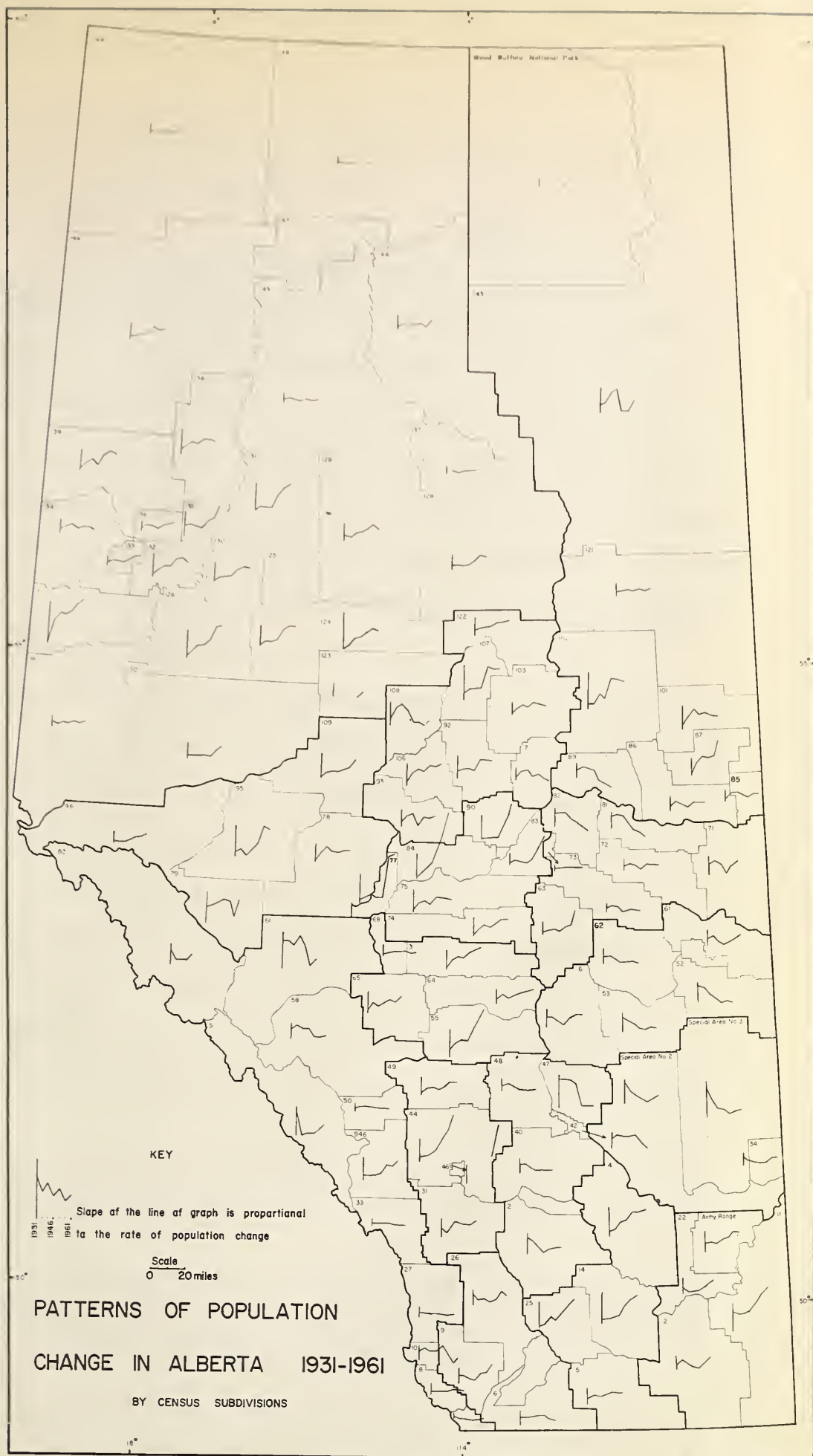


Fig. 20. Source: Census of Canada. See Appendix VI.

population numbers from the points of view of rates of change, percentage changes and variability of change.

CHANGING RATES OF GROWTH

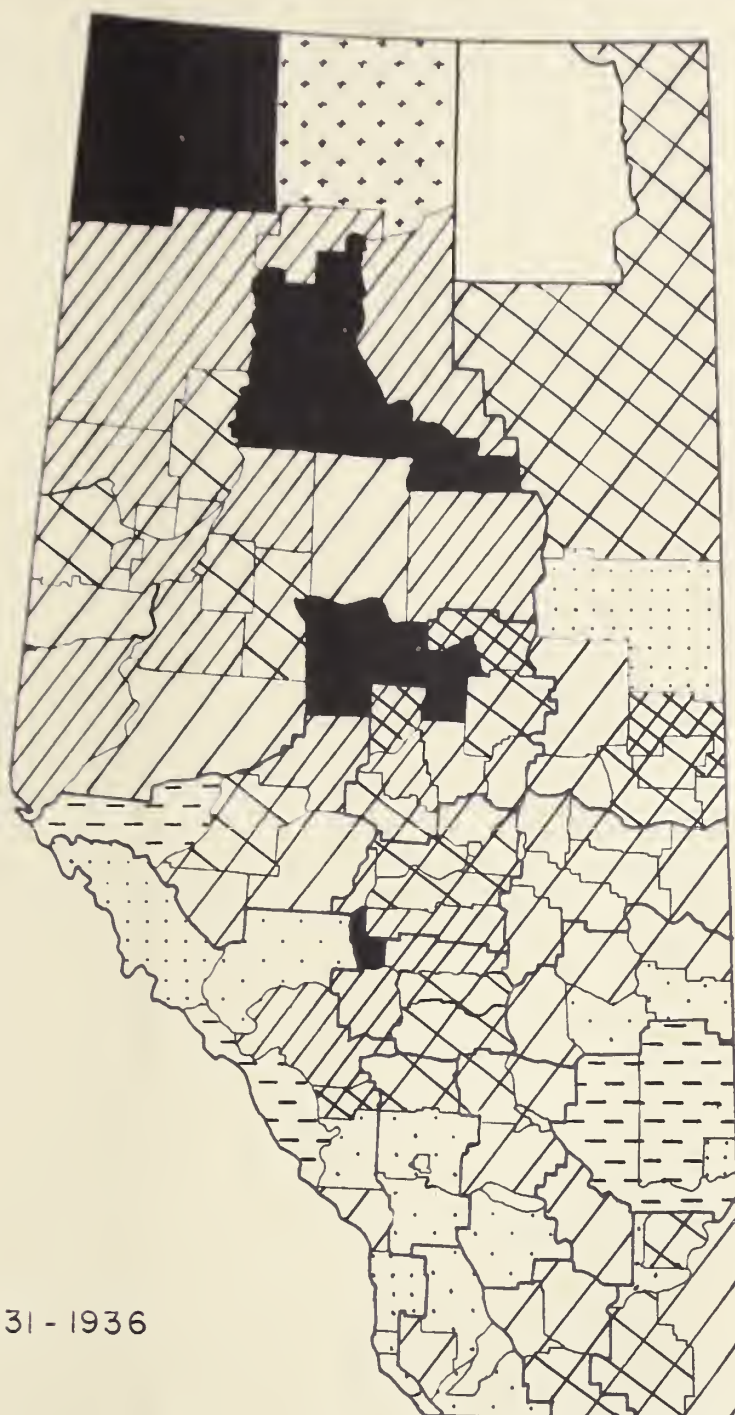
In Chapters I and II fluctuating population numbers in Alberta were discussed with constant reference to a simple graph drawn using a semi-logarithmic vertical scale. By using such a scale absolute numbers may be shown, and the slope of the line of the graph is proportional to the rate of growth of the population.³ Significant changes in the rate of growth of population can be appreciated easily and periods when they were taking place can be chosen for further study, avoiding the use of cumbersome numerical tables.

Figure 20 shows the graph of population change in each census subdivision. With the exception of national and provincial park areas, for which 1961 statistics are not yet available, the period 1931 to 1961 is illustrated. This map has the advantage of showing patterns of growth in specific areas, and it gives coherence which is almost impossible to obtain in any consideration of more than one hundred separate graphs divorced from the areas to which they refer. The use of a semi-logarithmic scale enables a direct comparison of patterns of change in areas with dissimilar population totals, large and small.⁴

³ Where changes from some hundreds of thousands to more than a million persons are involved the use of normal graph paper tends to be misleading when the slope of the graph may be read mistakenly as rate of growth.

⁴ Totals of population in the census subdivisions were used with the exception of the Indian population and the cities of Edmonton and Calgary, which were so outstanding in size and function that they distort the patterns of their respective census subdivisions.

RURAL POPULATION CHANGE IN ALBERTA
BY CENSUS SUBDIVISIONS



1931 - 1936

Perhaps the most outstanding characteristic of the map is the very great variety in pattern of growth illustrated, and the divergence of individual areas from the population pattern of growth of the Province. Numerous examples of divergence could be cited.⁵ Although there are variations between individual census subdivisions closer study shows certain recurring patterns. Census subdivisions which exhibit similar patterns are not always contiguous but are often scattered widely throughout the Province.

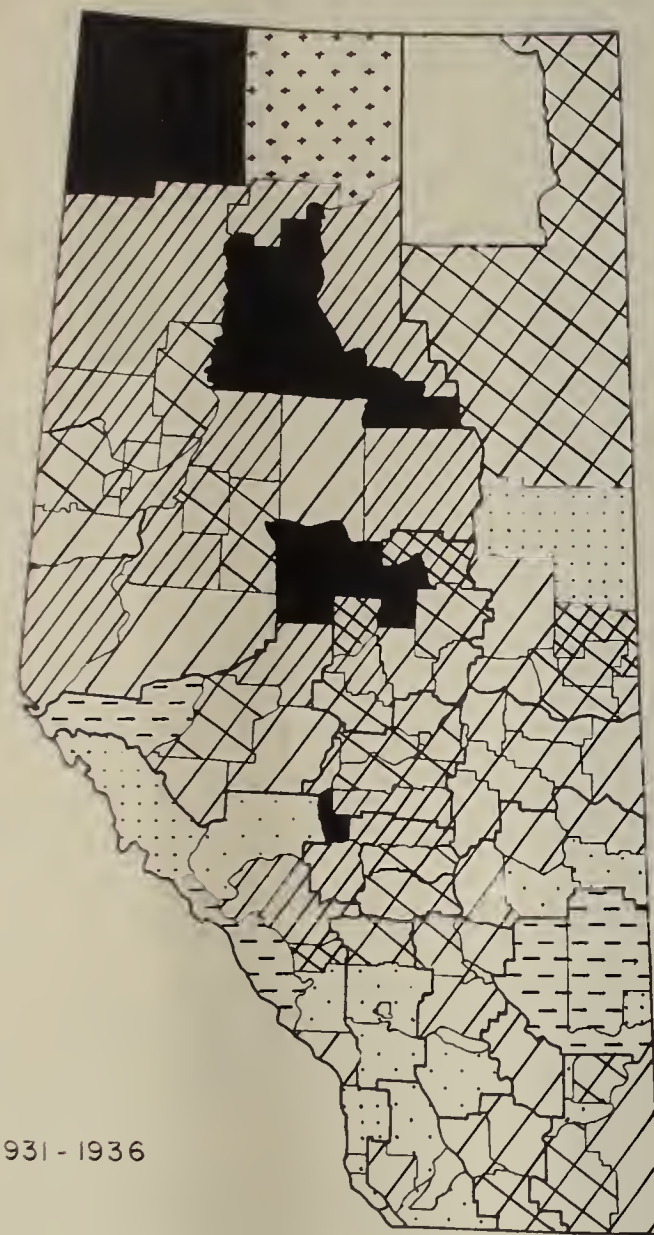
PERCENTAGE CHANGES

There has been little uniformity in the patterns of population change in the Province and most census subdivisions have changed significantly in numbers and rates of change in the last thirty years. Calculation of percentage increases and decreases in rural population during each five-year period between 1931 and 1961 further illustrated the complexity of the patterns (Fig. 21).⁶ The impossibility of deriving regional patterns with consistency of change soon became apparent. One reason for this should be stressed as it is of importance in the interpretation of maps. Each map is directly comparable only with the one directly preceding or following it since

⁵ For example, census subdivision No. 14, Taber, has a pattern very similar to that of the Province as a whole, while in census subdivision No. 82, Lamont, population fluctuations were almost completely the reverse in trend. Improvement district No. 27 showed very little change in contrast to Red Deer, No. 55, which changed greatly.

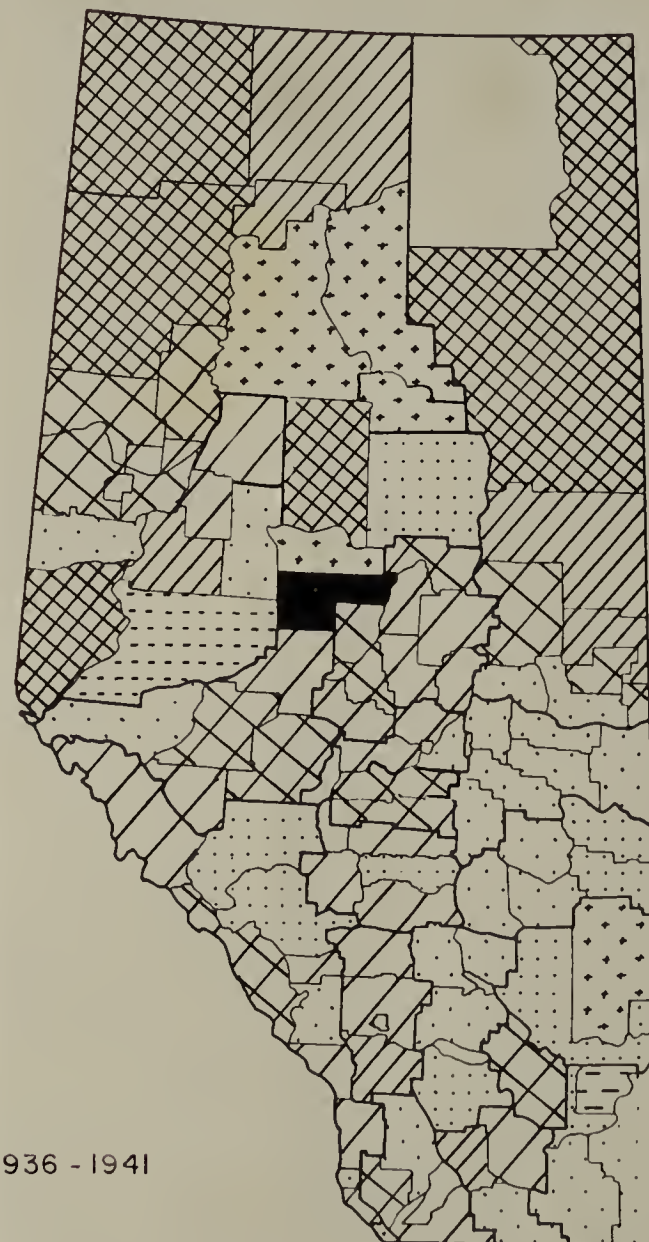
⁶ For the sake of simplicity the number of categories of percentage population change was finally reduced to ten. These were: 0-9 per cent, 10-19 per cent, 20-49 per cent, 50-99 per cent positive and negative and 100 or more per cent positive. Patterns resulting from these and from more detailed categories remain similar.

RURAL POPULATION CHANGE IN ALBERTA
BY CENSUS SUBDIVISIONS



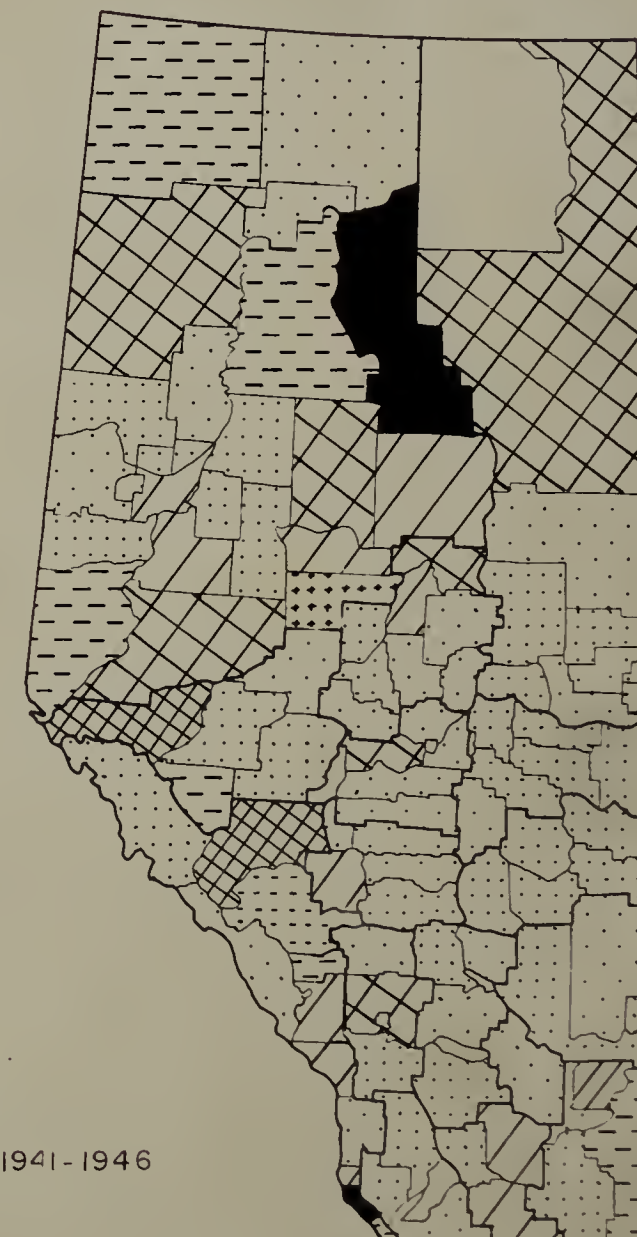
1931 - 1936

RURAL POPULATION CHANGE IN ALBERTA
BY CENSUS SUBDIVISIONS



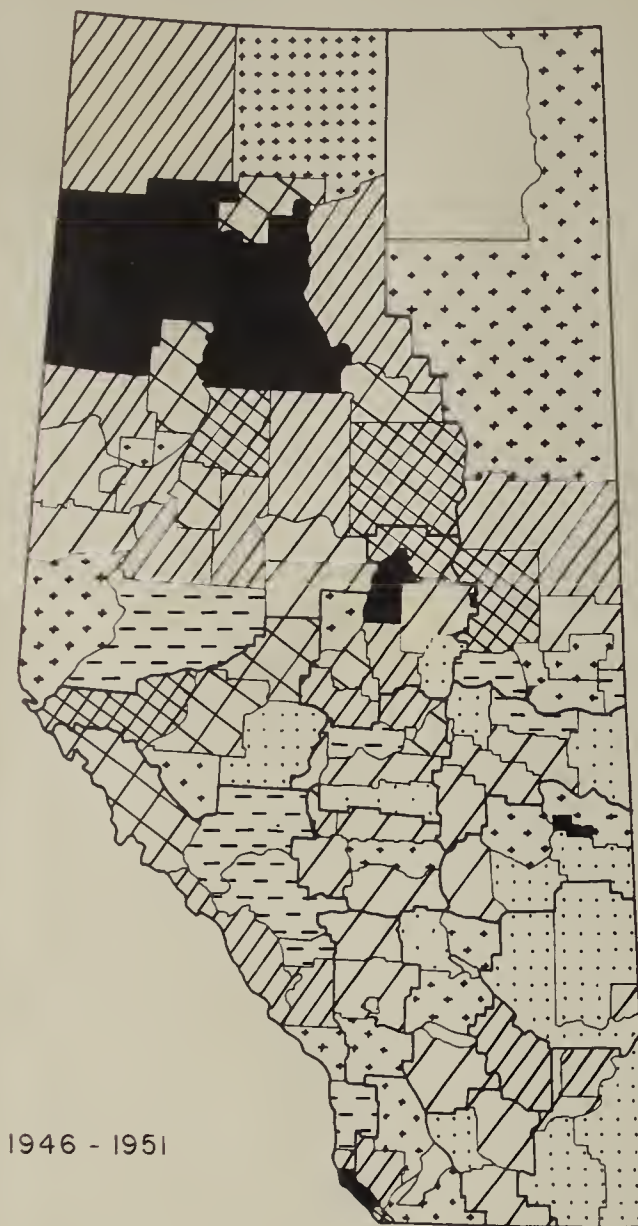
1936 - 1941

RURAL POPULATION CHANGE IN ALBERTA
BY CENSUS SUBDIVISIONS



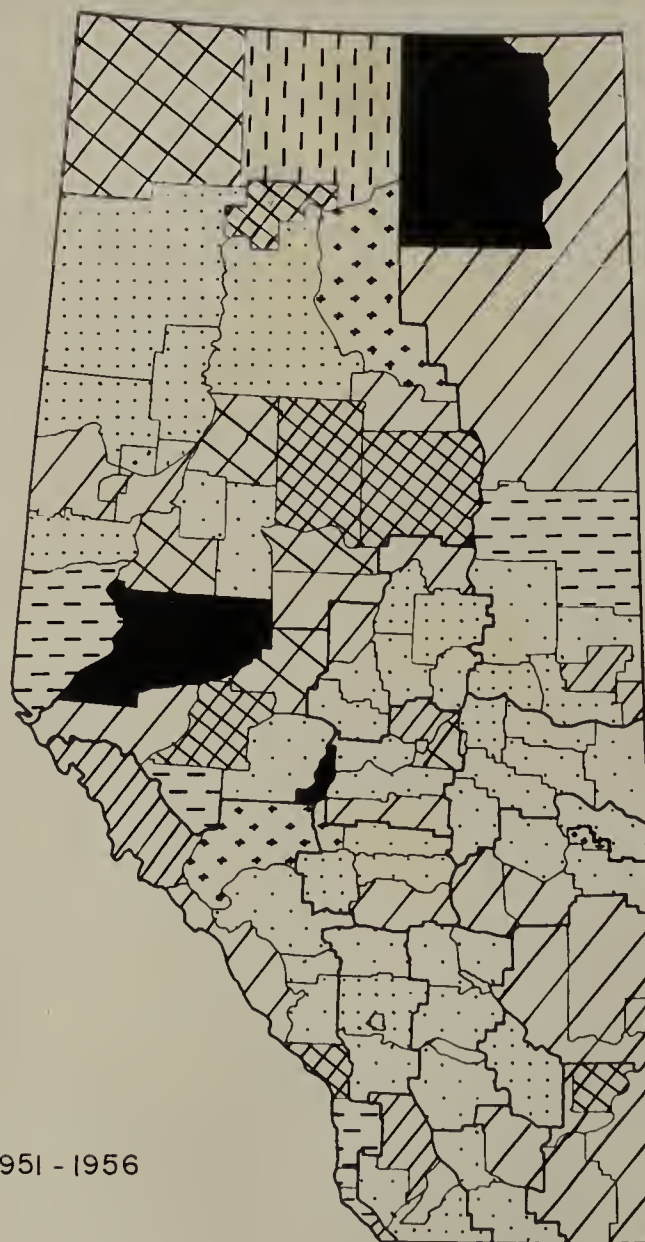
1941 - 1946

RURAL POPULATION CHANGE IN ALBERTA
BY CENSUS SUBDIVISIONS



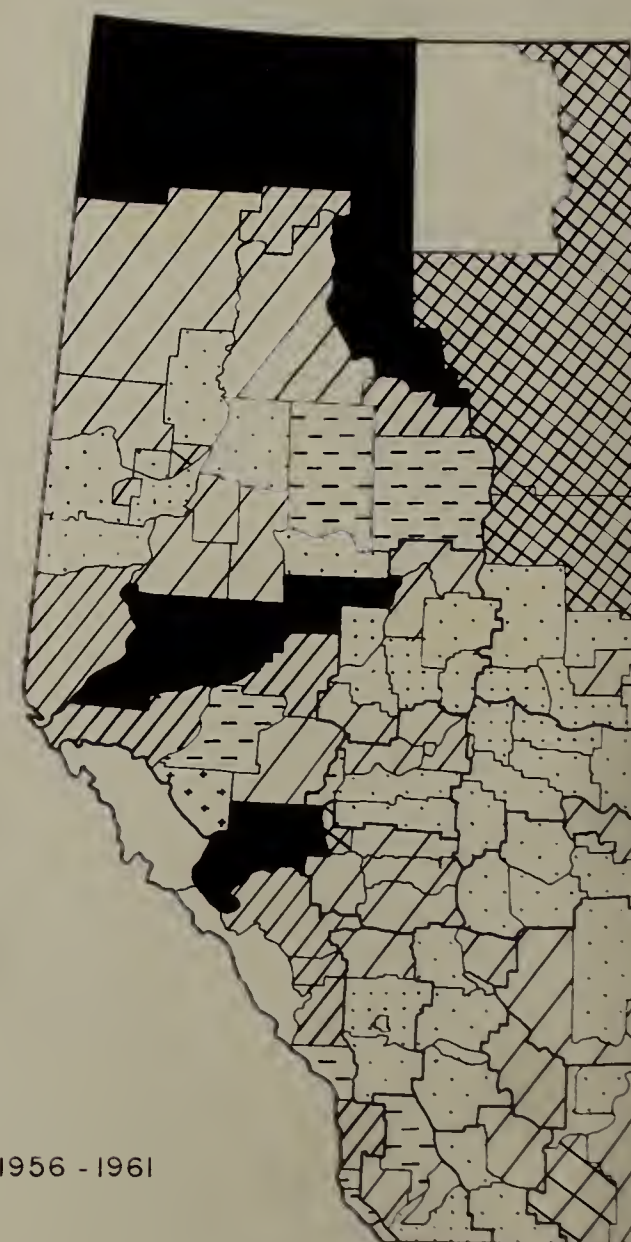
1946 - 1951

RURAL POPULATION CHANGE IN ALBERTA
BY CENSUS SUBDIVISIONS



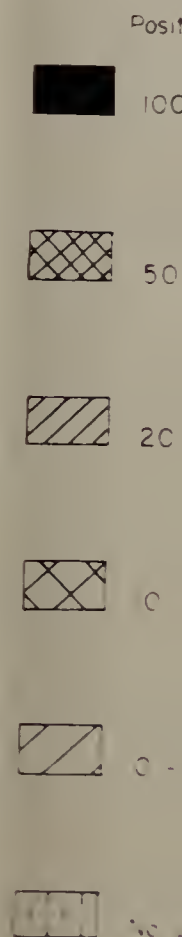
1951 - 1956

RURAL POPULATION CHANGE IN ALBERTA
BY CENSUS SUBDIVISIONS



1956 - 1961

RURAL PO



RURAL POPULATION CHANGE IN ALBERTA 1931-1961 BY CENSUS SUBDIVISIONS

KEY TO MAP SERIES

PERCENTAGE CHANGE

Positive change

Negative change



100+ %



100 %



50 - 99 %



50 - 99 %



20 - 49 %



20 - 49 %



10 - 19 %



10 - 19 %



0 - 9 %



0 - 9 %



No population



Data lacking



No change

Fig. 21. Source: Census of Canada. See Appendix VI.

the percentages refer to five-year periods.⁷ Another characteristic of the series requires discussion. One of the reasons for drawing the maps was to illustrate the great changes which can take place even in census subdivisions such as in northern areas where total numbers of people are small. There is often a tendency to over-emphasise areas which have large expanding populations, even though the percentage increase is small.

The series illustrates the startling changes which have occurred in some of the less densely populated census subdivisions, but these changes should not be overstressed because generally they have contributed less to the overall growth and economic development of Alberta than, for example, the central census subdivisions which are much more densely populated but have not had large percentage changes.

Remembering the limitations of the maps certain generalisations may be made. The tendency, which may be seen in both the dispersion graph (Fig. 22) and maps, towards a great increase in the number of census subdivisions experiencing a negative change in the 1936-1941 period compared with the 1931-1936 period is still more pronounced between 1941 and 1946 when many were changing negatively. During the next five-year period there was some recovery, but from 1951 to 1956 there was again a large number of census subdivisions with reduced

⁷ For example, census subdivision No. 124 experienced a positive change of more than 160 per cent between 1931 and 1936. From 1936 to 1941 there was a negative change of between 50 per cent and 100 per cent; in 1941 to 1946 there was an increase of up to 10 per cent. This does not mean that the population in 1946 had regained its 1936 size, but only that in 1946 it was larger than the reduced total in the middle of the period without reference to the first.

POPULATION VARIABILITY 1931 TO 1961

BY CENSUS SUBDIVISIONS OF ALBERTA

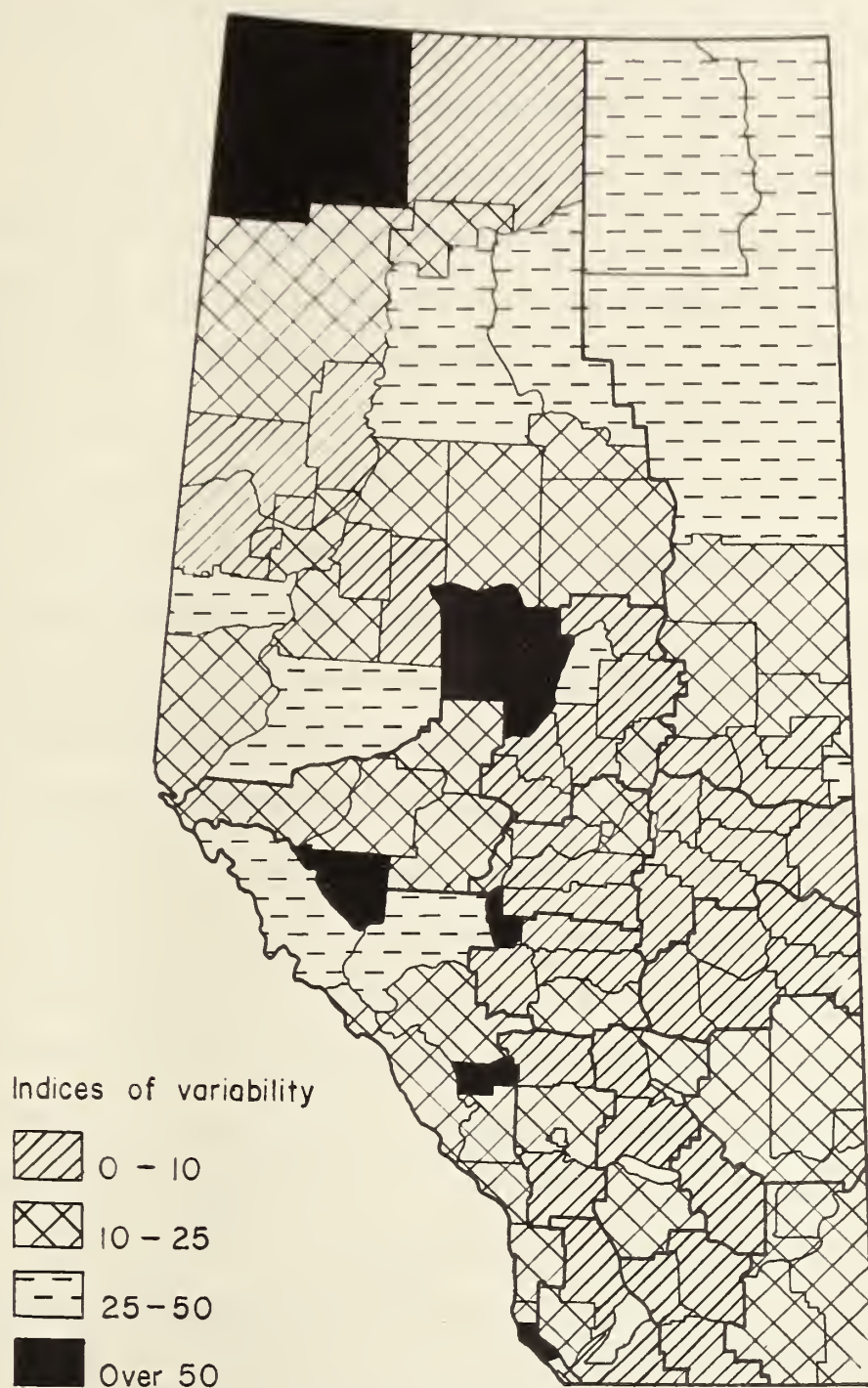


Fig. 23. Source: Compiled after A. Geddes from data of Census of Canada.

populations. There are many examples of positive changes of more than 100 per cent, and even up to 500 per cent. Many of the changes can be understood more clearly in relation to factors such as farm abandonment in arid areas, farm enlargement and climatic variability.

VARIABILITY OF CHANGE

Percentage change is of interest, but more fully to understand the manner in which population reflects the experiences of the census subdivisions during the period a study of variability was undertaken. The index of variability previously used by Geddes was used in this study to calculate an index for each census subdivision.⁸ The average deviation from a theoretical line of growth of total populations from 1931 to 1961 was calculated in each case and expressed as a percentage of the mean population. When these indices were plotted (Fig.23) some comparisons could be made with the maps showing rates of growth and percentage change, and areas with small total populations were often outstanding for their great variability. Certain peculiarities became apparent, for example, census subdivisions Nos. 50 and 48 have little variation in rate of growth judging from the graphs, yet the index of the former is 61.2 and of the latter 4.09 related to the fact that the absolute numbers involved are hundreds and thousands respectively. The map indicates the amount of variation from a theoretical line of growth but not if that variation is positive or negative, thus the index of a constantly fluctuating population does not indicate if an overall loss or gain in population is characteristic

⁸ A. Geddes, "Variability in Change of Population in the United States and Canada, 1900 to 1951," Geogr. Review, Vol. 44, No. 1, January 1954, pp. 88-100.

of the census subdivision. For this reason it is best used in conjunction with maps of percentage and rates of change.

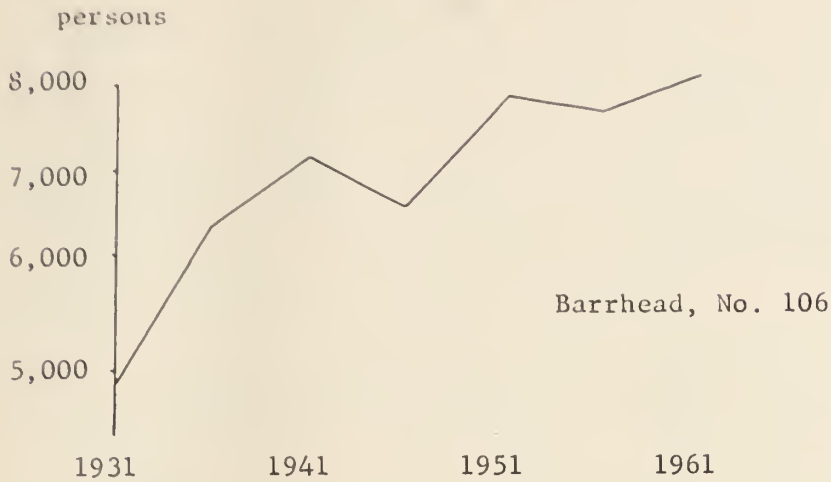
GROUPING OF PATTERNS OF POPULATION CHANGE

The most striking conclusion which results from some analysis of the data is the lack of uniformity from one census subdivision to another. It is evident that definite mutually exclusive regional groupings involving all census subdivisions are non-existent, and that there is wide divergence from a pattern of continuous growth. However, certain patterns of population change have a tendency to be repeated in different areas and this would suggest the basis for a general grouping.

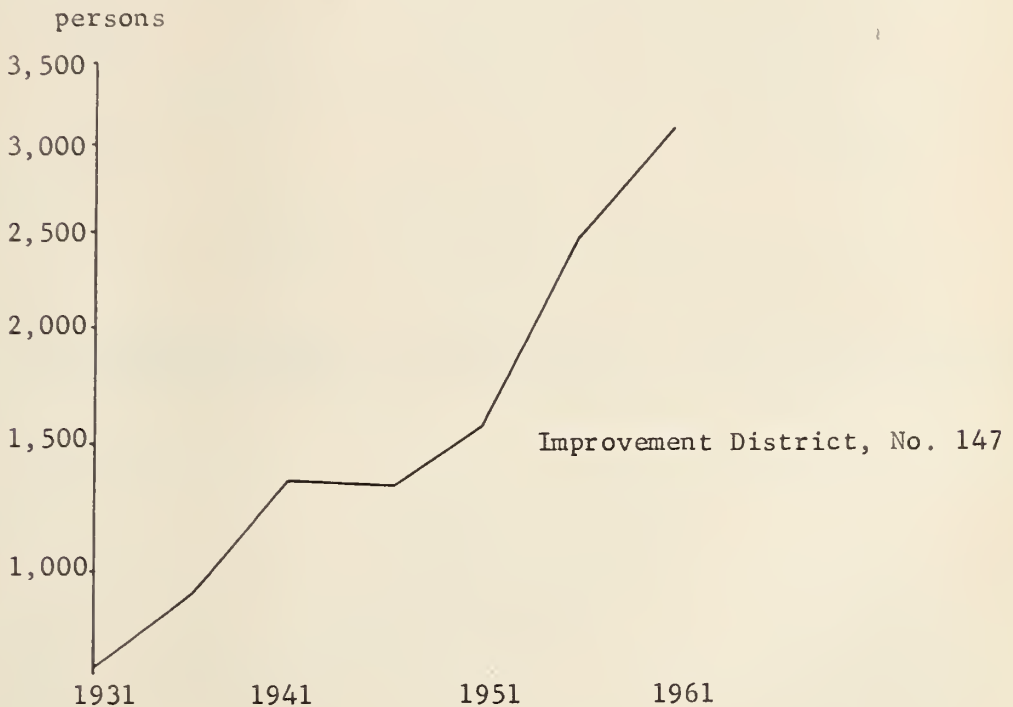
When individual graphs of population change were studied solely from the point of view of trends, seventeen recurring patterns became apparent (see below). It was found that fifteen census subdivisions were so individual in pattern that they did not fit into any recognisable group. These formed a miscellaneous group of their own. In each group the number of persons involved differs, and the degree of change in any five year period is obviously unlikely to be identical yet the overall pattern is similar. The groups are differentiated below and representative examples are shown as graphs:⁹

⁹ For the detailed listing of census subdivisions in each group see appendix I.

1. A rapidly changing population. This is characteristic of five census subdivisions.¹⁰



2. Steady growth of population except from 1941 to 1946. This is characteristic of ten census subdivisions.

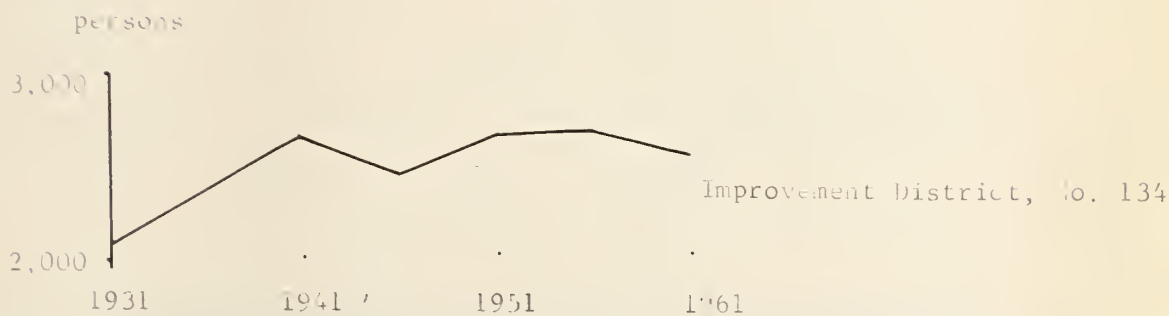


¹⁰ Graphs showing a representative pattern of growth are used to illustrate each group.

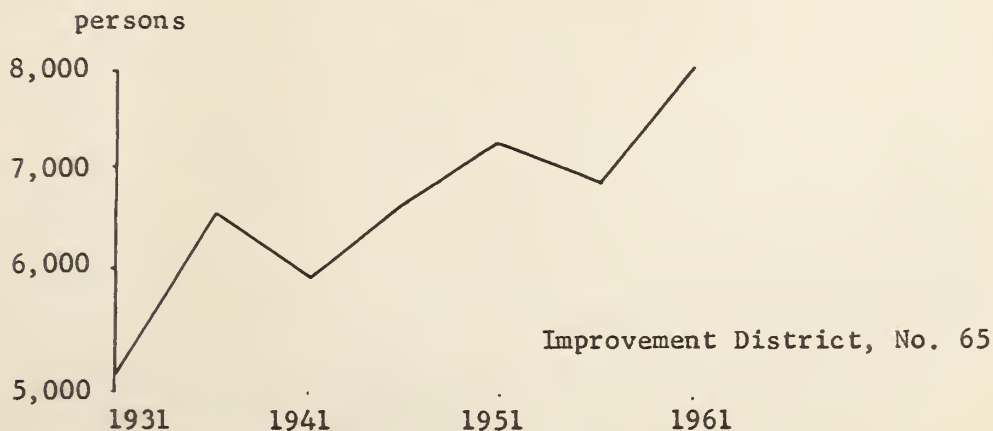
3. Steady growth except between 1941 and 1946, and 1956 and 1961. This is characteristic of three census subdivisions.



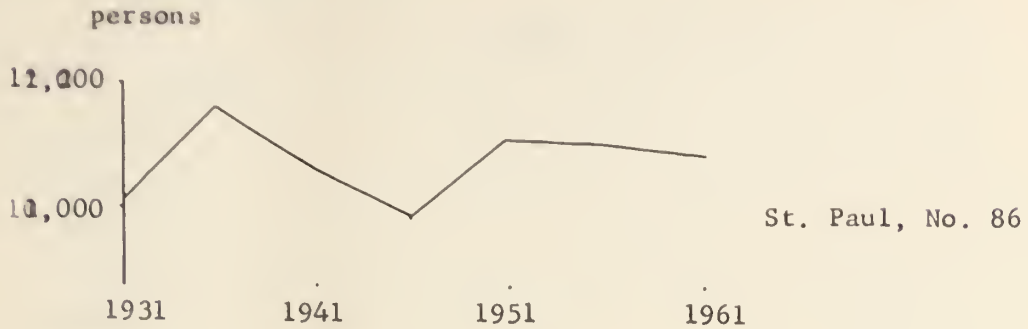
4. Steady growth except between 1941 and 1946, and 1956 and 1961. This is characteristic of three census subdivisions.



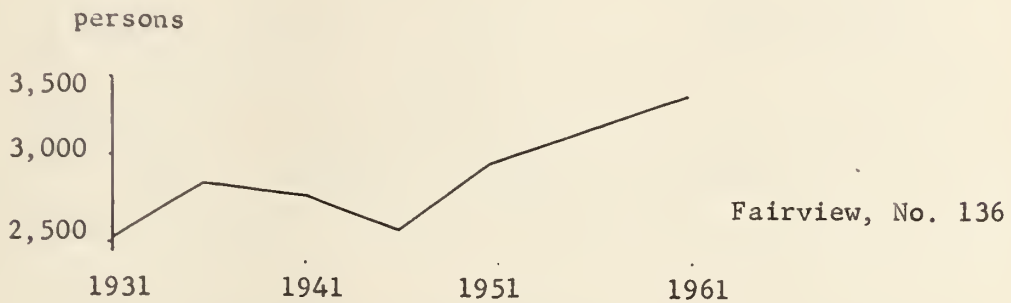
5. Irregular changes and recent growth. This is characteristic of four census subdivisions.



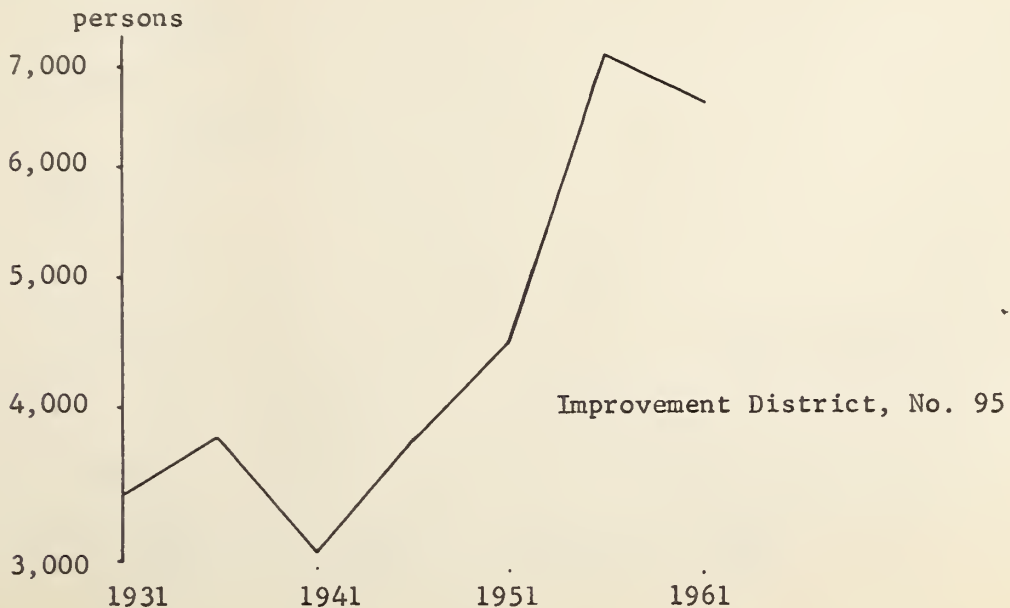
6. Predominantly declining after initial increase. This is the pattern of six census subdivisions.



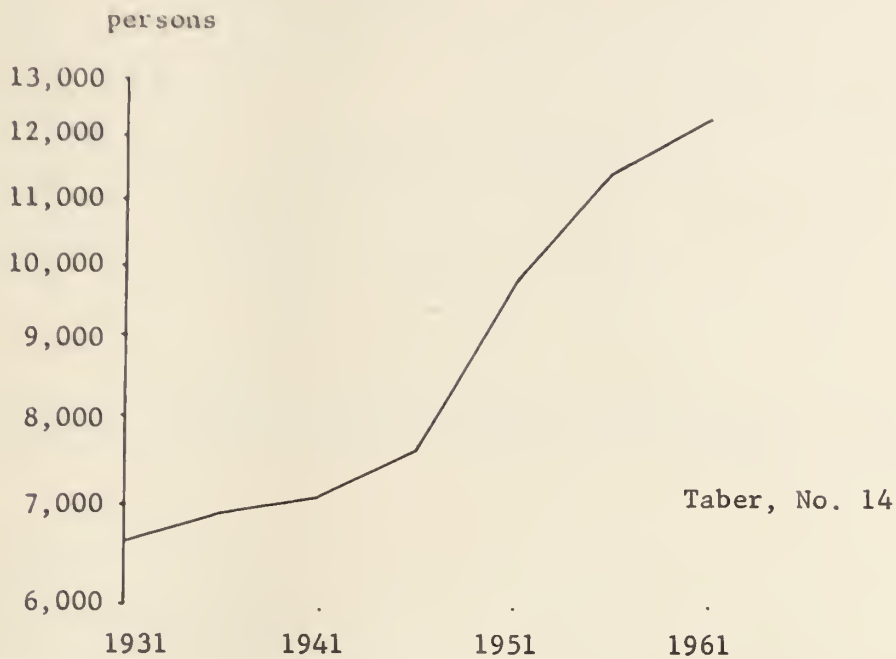
7. Positive change except between 1936 and 1946. This is characteristic of thirteen census subdivisions.



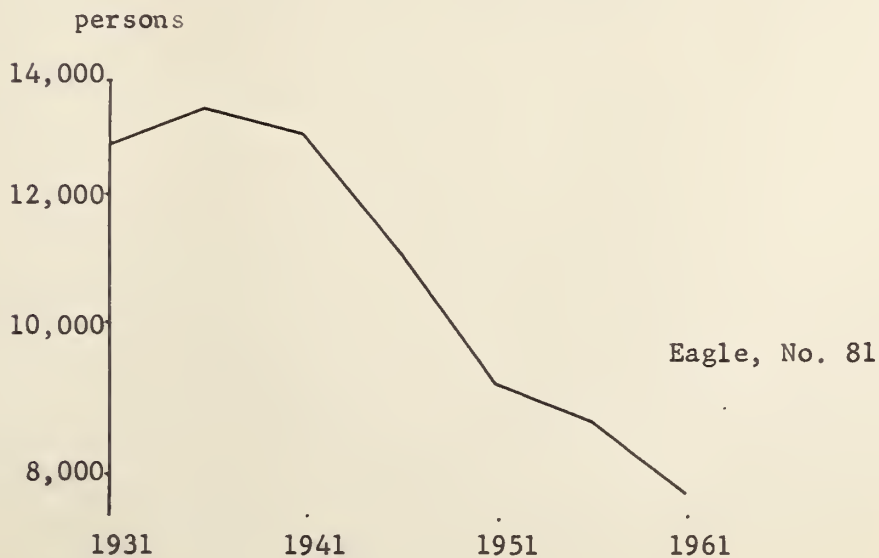
8. Increasing population except between 1936 and 1941, and 1956 and 1961. This is characteristic of three census subdivisions.



9. Continuous growth. This is characteristic of seven census subdivisions.



10. Continuous decline after 1936. This is characteristic of three census subdivisions.



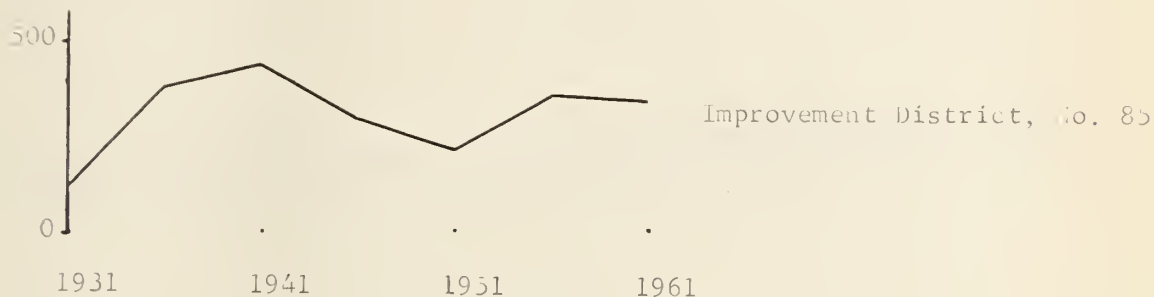
11. Decline 1931 to 1951 after increase for 1901 to 1921. This is characteristic of two census subdivisions.

persons



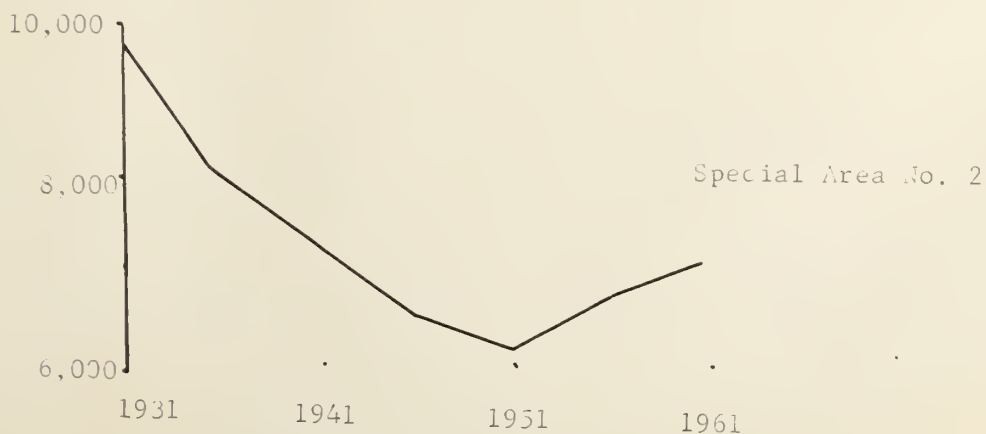
12. Moderately and then rapidly changing population with recent decline. This is characteristic of three census subdivisions.

persons

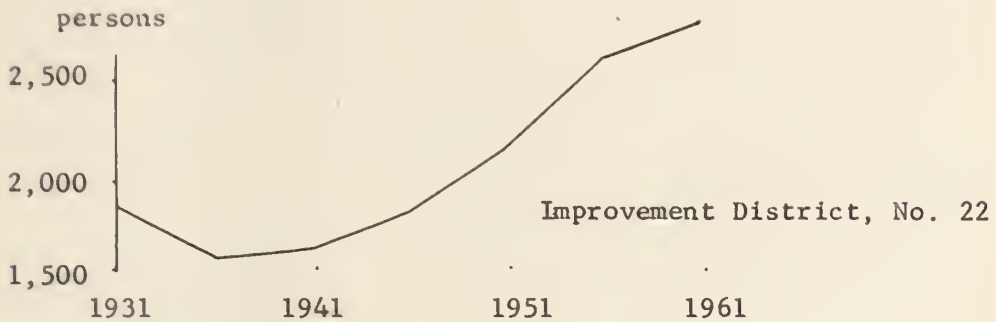


13. Continuous decline until the decade 1951 to 1961. This is characteristic of seven census subdivisions.

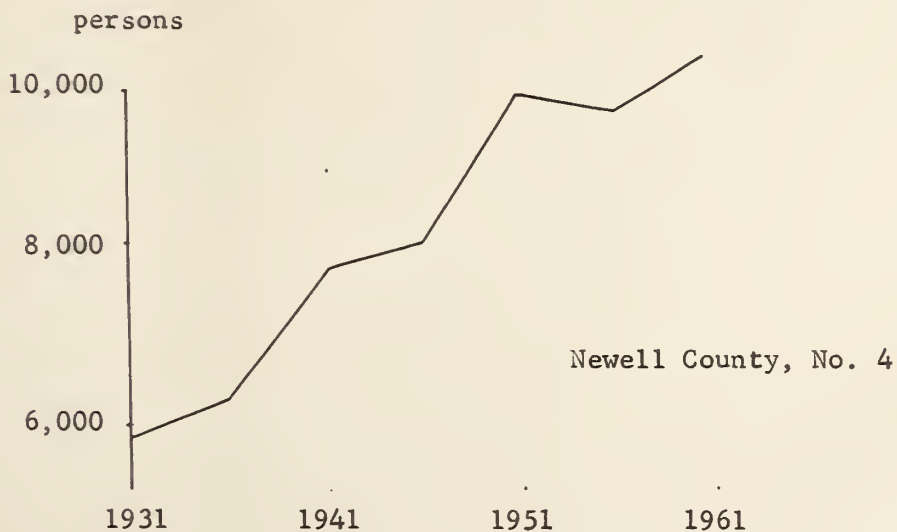
persons



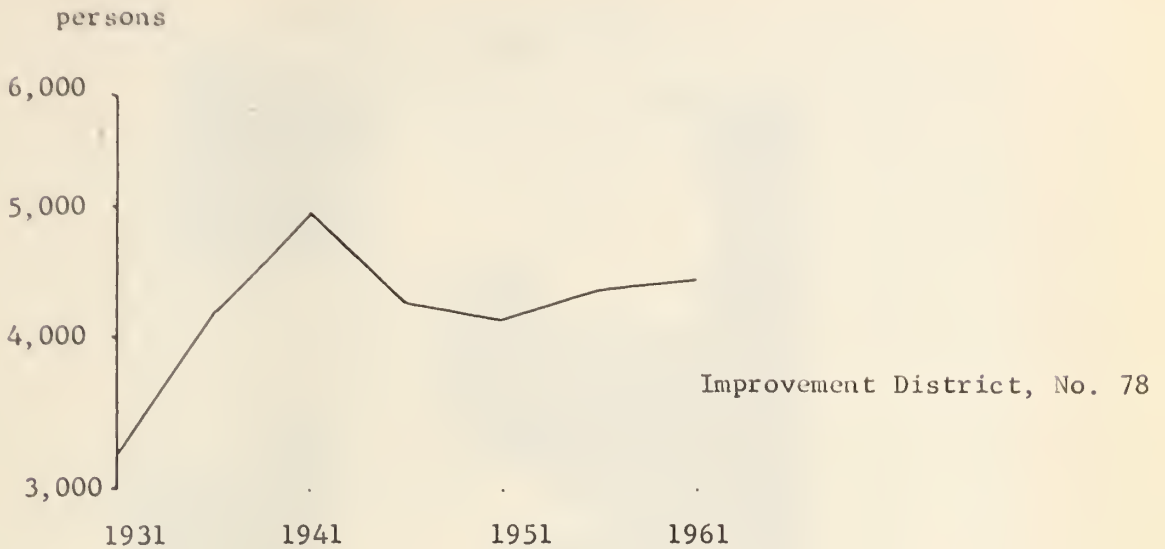
14. Increase after an initial five year decline. This is characteristic of ~~five~~ census subdivisions.



15. Fluctuating growth except between 1951 and 1956. This is characteristic of four census subdivisions.



16. Increase in population except between 1941 and 1951. This is characteristic of five census subdivisions.



17. Miscellaneous patterns. These are shown by fifteen census subdivisions which have patterns of change not consistent with any group.

PATTERNS OF POPULATION CHANGE

ALBERTA 1931-1961

FIVE MAJOR CATEGORIES

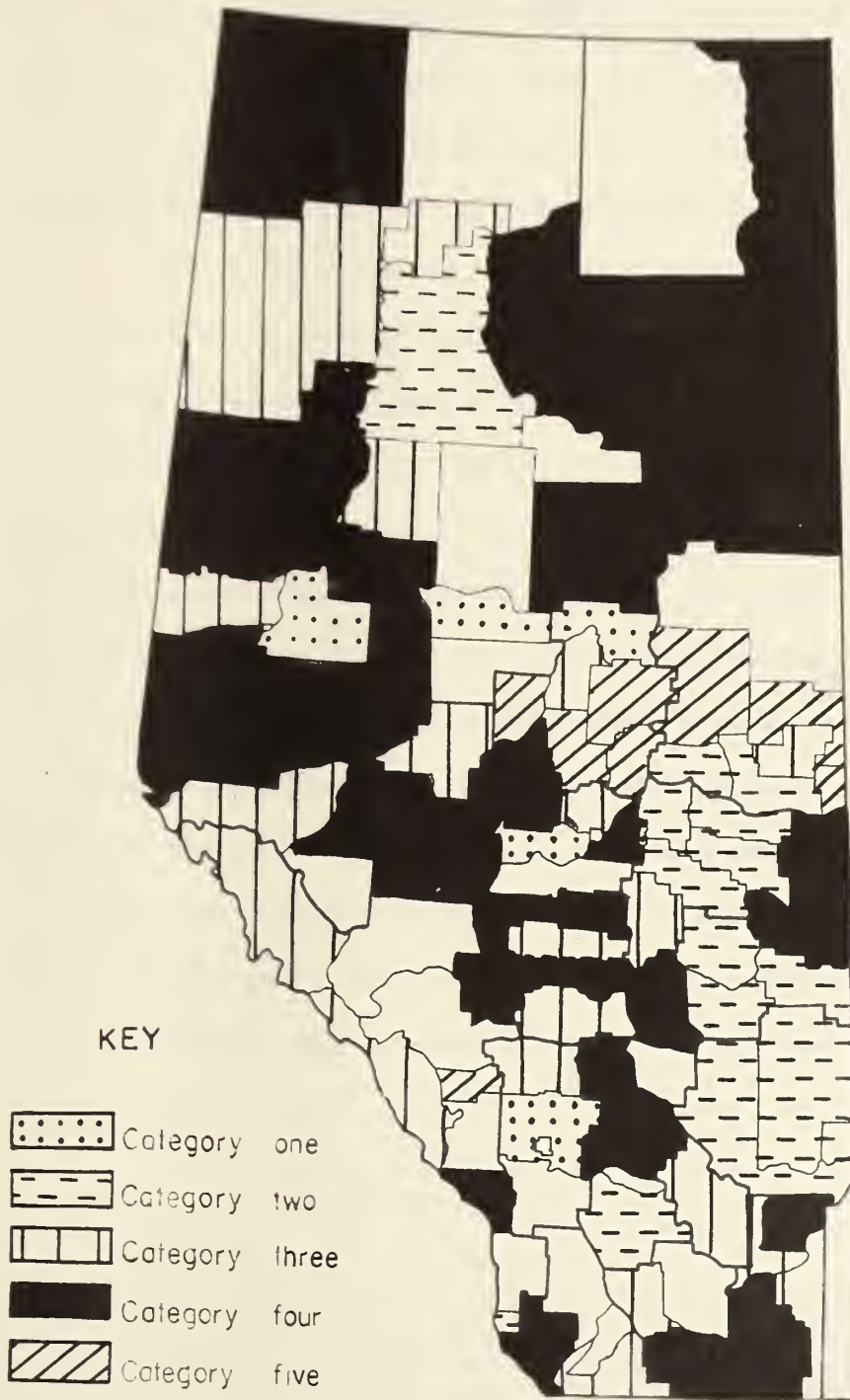


Fig. 24. Source: Data from Census of Canada.
See Appendix VI.

In the introduction to this study the degree to which the overall pattern of change in the population of Alberta is characteristic of individual census subdivisions was questioned. By now it is evident that the provincial pattern is found in a surprisingly small part of Alberta. Only a very few census subdivisions experienced continuous growth throughout the period, although a majority did grow for more than half of the thirty years.

On the basis of the representative graphs the seventeen groups can be re-grouped into five categories (Fig. 24): those which had continuous growth (Category One), those in which growth was predominant (Category Three), those in which growth was experienced in two-thirds of the period (Category Four), those in which growth and decline were equally active (Category Five), and those in which decline was predominant (Category Two). The increasingly generalised nature of this grouping is apparent since no account has been taken of the marginal examples included in the previous grouping. This, however, does not affect the main conclusions to be drawn from their study. Finally, from the preliminary statistics of the 1961 Census and from those of 1956 (Fig. 36) the distribution of the areas of recent decline and increase may be discussed.

CHAPTER IV

SELECTED PATTERNS OF POPULATION CHANGE: 1931 TO 1961

BY CENSUS SUBDIVISIONS

The great variety in the patterns of population change in the Province has been shown. While the explanation of every population change in each census subdivision is outside the scope of the thesis, it is now necessary to provide illustrations of the variety and to discuss some of the most outstanding causal factors behind the changes - the way in which they have operated in different areas at different times.

An exhaustive discussion of each of the seventeen patterns of population change is unnecessary, and instead the more generalised and less unwieldy basis of the five categories suggested at the end of the previous chapter will be used. These categories ignore the actual dates when increase or decrease was operative and although the stress continues to be on the overall patterns of change the years affected will be noted in the individual discussions of the categories.

The first two categories to be discussed, those of continuous increase and predominant decrease, are dealt with in more detail than the remaining three. They represent the provincial pattern of change, and the pattern which is most nearly opposite in trend. Since the general characteristics of population change tend to be repeated in different parts of the Province unnecessary repetition is avoided by using only selected examples to illustrate

CATEGORY ONE

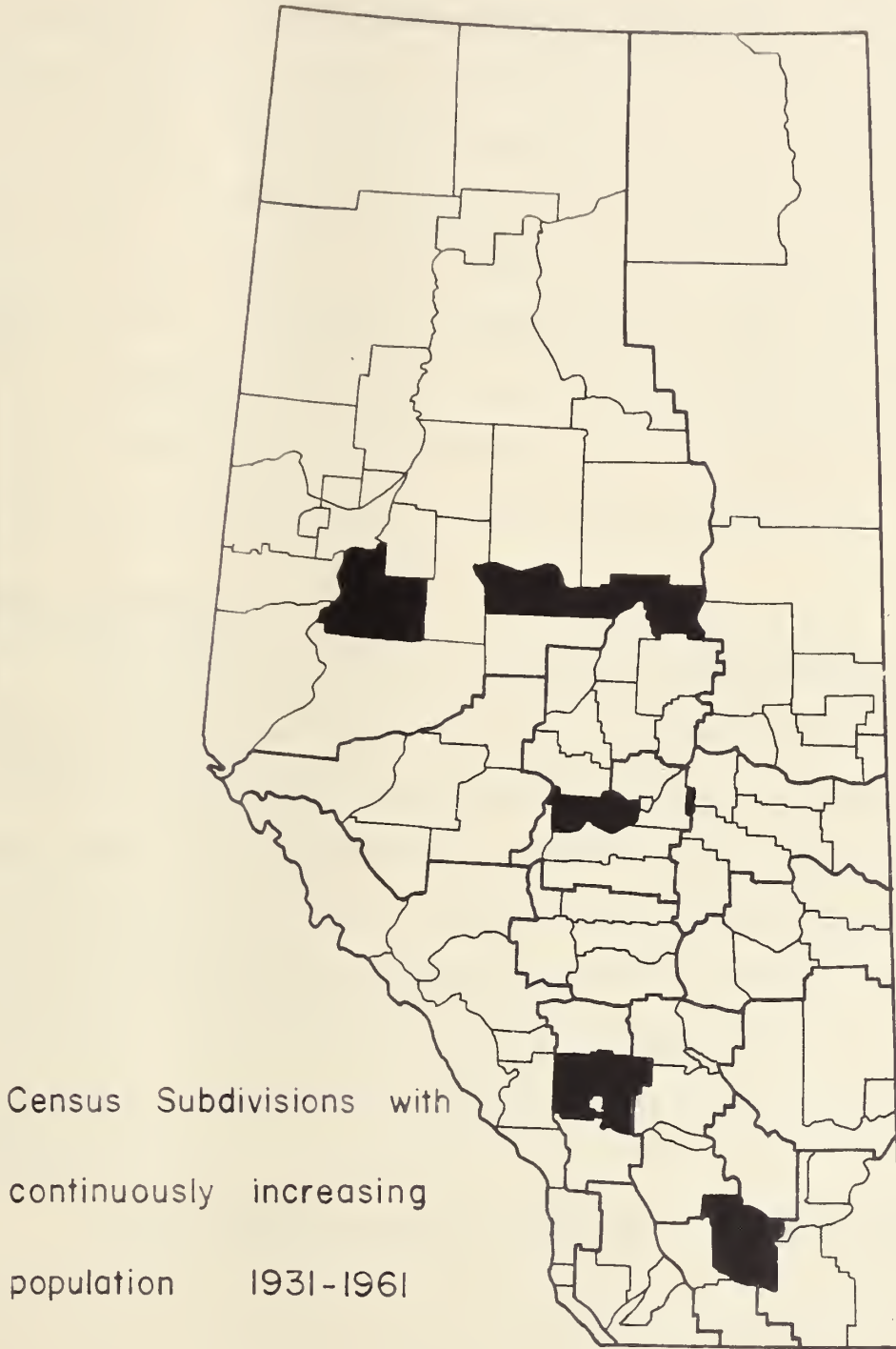


Fig. 25. Source: Data from Census of Canada. See Appendix VI.

the remaining three categories.

AREAS WITH CONTINUOUSLY GROWING POPULATIONS 1931 TO 1961

This category is exceptional since it is the only one which is composed of only one of the seventeen representative patterns of population growth. Group 9, characterised by continuous growth of population, does not occupy contiguous areas but is found in five parts. The first part extends south of Peace River town towards the Swan Hills (Fig. 25). The second lies east of Lesser Slave Lake, the third west of Edmonton, the fourth around Calgary and the fifth east of Lethbridge (Fig. 25). Thus it is not surprising to find that despite similarity of growth patterns, the areas support different economic activities related to their immediate resources.

Population Density

Densities of population vary widely in the different parts. The area south of Peace River town has a density of less than two persons per square mile although it has increased over the thirty-year period. The majority of the people are rural, and rural densities have increased since 1931. In the area east of Lesser Slave Lake total population numbers and densities were even smaller. The population rose to just over 600 from 165 during the thirty-year period, although percentage increase was more than 50 per cent in two five-year periods.

In the Taber area, east of Lethbridge, population totals were

much larger and densities have increased more quickly than elsewhere in this category. Population almost doubled between 1931 and 1961 and in the latter year it was well over 12,000. Much of this increase was in urban population. Rural numbers rose from over 5,000 in 1931 to over 7,000 in 1961, but urban numbers increased from a little over 1,200 to approximately 5,000 in the same period. The location of much of the increase of population in urban centres is one characteristic which is widespread in the Province, to varying degrees. In the Stony Plain area urban growth is most important in the rapid increase of the totals. The incorporation of Jasper Place during the period is probably responsible for the apparent decline in the rural population.¹

Rural Population Density and Resources

The differences in rural densities are more easily understood

¹ Incorporation of an urban settlement refers to the fact that it has been granted powers of local government.

The numerical limits used to define cities, towns and villages were given in a previous footnote (p. 26), but it has not been possible to use the limit of 1,000 persons separating the rural and urban population because statistics are given only for incorporated settlements. A thirty-year period is involved and a numerical limit might be applied to all incorporated settlements at the beginning of the period, and any settlement would receive attention only when it reached the required total. A coverage of all settlements in the Province which are urban by this definition still is not ensured because there is no certainty that even larger settlements are incorporated and so appear in the census. Also by ignoring the smaller incorporated settlements, in several census subdivisions no urban population would be recorded where group settlement is actually of significance.

when the agricultural potential is assessed.² Those parts south of Peace River and east of Lesser Slave Lake lie in areas of degraded black and grey-wooded soils. The fertility of these soils is not high enough, without the application of large amounts of fertiliser, to support a dense farming population. The natural vegetation of much of the area is northern forest and the precipitation is usually of the order of 12 inches per annum. East of Lesser Slave Lake a large area remains unsurveyed, and is not likely to be developed for agriculture. Lumbering and fishing as well as mixed farming support a sparse population. Rural population is the most important contributor to total population growth in this area, and its consistent increase since 1931 was associated with the spread of agriculture.

The Taber area offers contrasts since it lies in the southern part of the Province in the brown soil zone. On its western margin, however, where the Oldman River enters, there is a small section of dark brown soil. Precipitation is meagre, ranging from 11 inches to 13 inches, with high evaporation rates and the possibility of frequent droughts. Irrigation locally provides for a larger population than might be expected in this short-grass prairie, although dry farming supporting a medium density of population is a major use.

² Densities of population have not been mapped because, although they give an idea of changes over a period of years, the impressions given when figures are plotted are often unrealistic since no account is taken of physical or other obstacles to settlement operative in certain parts of census subdivisions. No census subdivision has uniform population distribution. The figures have value for comparison if they are not taken as giving the location of the population.

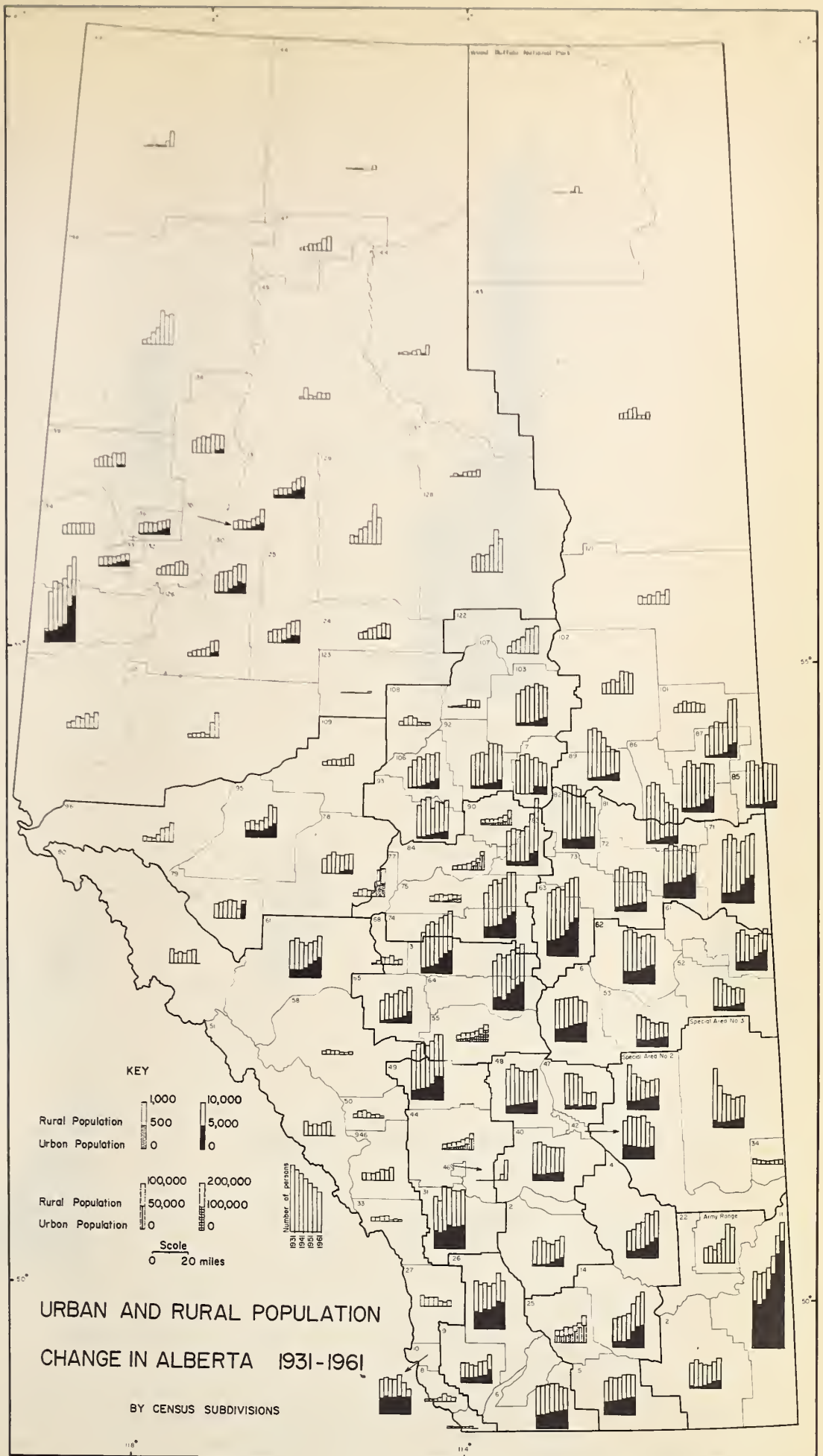


Fig.27. Source: Data from Census of Canada. See Appendix VI.
N.B. Urban population designated as at census years.

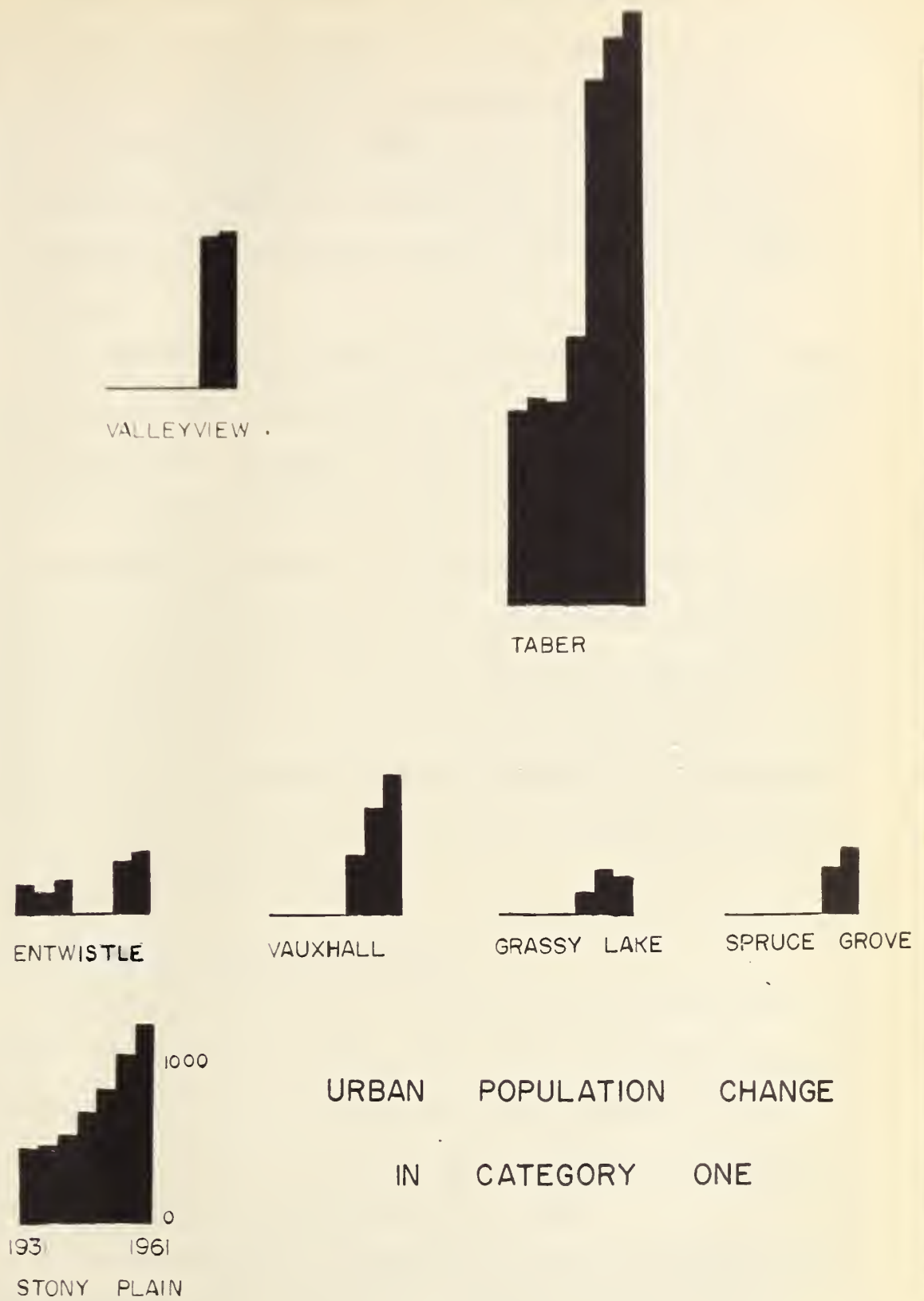


Fig. 28. Source: Census of Canada.



The Bow, Oldman, St. Mary, Belly, South Saskatchewan and Little Bow rivers have been used increasingly for irrigation since the beginning of the century (Fig. 26). In 1956 over 510,000 acres could be irrigated and planned extensions will bring the total to 722,000 acres. The prosperity and stability of irrigated farming to some extent has been responsible for the consistent growth in population, and a high rural density.

The Stony Plain area contrasts markedly with the others. Three soil zones are present in this margin of the parkland: black, degraded black and grey-wooded. Farming is mixed; close to Edmonton dairying is practiced and in the grey-wooded soil areas further west farms tend to be marginal economically and livestock numbers increase. Black soils are among the richest in the Province and can support more people than the grey-wooded so that local variation in population density is related indirectly to the soil type through farm type and productivity, and is an important consideration for any intending farm settler. Much of the population in this area might be classified as rural non-farm or part-time farmer.

Urban Growth and its Relation to Function

The rural-urban ratio in the individual census subdivisions illustrates the general trends (Fig. 27). When it is considered in more detail the variation in urban growth is particularly striking (Fig. 28). The dates of the incorporation of centres which achieved this distinction during the thirty years is evident.

In the area southeast of Peace River no urban settlements were incorporated before 1931. Settlement of the area took place mainly after 1916 when the railway to Peace River was constructed. The open

forest attracted settlers, and the growing season, although short, was long enough to permit wheat growing. Most of the centres are located on the Northern Alberta Railway line which links Edmonton with Peace River town, Grande Prairie and Dawson Creek.

Valleyview is an exception to the pattern of agricultural service centres in the surrounding area. It owes its stimulus to the building of a highway to the Peace River area and to the discovery of oil at Sturgeon Lake in 1952, and at Sturgeon Lake South in 1953. Estimates of reserves make this Alberta's fifth largest field. Both of these fields faced problems of inaccessibility because of their northern location, and a pipeline was built over two hundred miles south to join the trans-mountain pipeline. This solved some of the difficulties. Production of oil had become significant by 1956 and Valleyview grew from a hamlet with only a few inhabitants to its 1961 total of over 1,000 persons; it functions as an oil supply and service centre.

Most urban settlements in the Taber area are young, the result of recent incorporation. They owe their growth largely to the development of irrigated farming. Taber has some industry dependent on local products - a sugar beet factory and a vegetable cannery are representative.

Urban population in the Stony Plain area has been affected greatly by the presence of Edmonton on its eastern border, and by the classification of Jasper Place as urban. Spruce Grove and Stony Plain remain agricultural service centres. Another function is illustrated by Seba Beach - for the last thirty years a summer resort. The varying fortunes of Entwistle were closely tied to the decline of the coal mining industry which has been hastened by the increasing production of oil and gas. It was incorporated before 1931 but from 1942 until

1956 it was disorganised.³

The census subdivisions which make up this category have one characteristic in common. They alone had continuously increasing populations from 1931 to 1961. They show that similarity in the pattern of population growth in different parts of the Province is not necessarily caused by the same factors. Census subdivisions included ranged from those with no urban population to those with a large proportion of urban dwellers, and included widely differing rural densities.

There is no one reason for growth equally important throughout the area making up the category. Economic prosperity was related mainly to the development of agriculture, which took several forms. Irrigation in the south increased the arable acreage, settlement spread into virgin land in the north, and established farming in the central area was further consolidated. All these extensions were encouraged by the increasing demand from the growing urban population which it stimulated.

AREAS WHERE POPULATION DECLINE IS PREDOMINANT

Group 10 (p. 38) showing continuous decline after 1936 is a good example of this category. Apart from the first five-year period the loss of population was uninterrupted. This group shows almost complete reversal of provincial trends in the pattern of population change. For this reason it is dealt with separately from the remainder of the category found in Groups 6 and 13.

³ The term is used to describe the loss of powers of local government by the settlement in question, often as the result of its inability to meet its financial obligations.

Areas of Continuous Decline 1936-1961: Population Density, Change and Variability

The Group 10 area lies northeast of Edmonton on either side of the North Saskatchewan River. Elk Island National Park is on its southwest border (Fig. 20). Population densities reached a maximum of over thirteen persons per square mile in 1936 but had fallen to less than eight persons per square mile in 1961. Rural population change shows the same pattern, (Fig. 27), and its greatest percentage changes were during the 1940s when the Second World War and availability of jobs in Ontario and British Columbia were responsible for some of the reduction in numbers. The variability of the population change appears the same throughout the Group (Fig. 23) but in fact there is some variation. Even where patterns of change and percentage change are similar the indices of variability may differ considerably.

Rural Population Density and Resources

The area lies in the black soil zone for the most part although degraded black and grey-wooded soils are found locally in the northeast. The variations in soils were not accurately known at the time the rapid settlement took place. The main aim of the farmers, to grow wheat, was easily achieved in this area. The coming of the railways was instrumental in the rapid increase of population. The dense network of railways and of small settlements is the contemporary expression of past population history. The increase in population between 1931 and 1936 was due to the relatively large numbers of immigrants who were still coming to the Province, at a time when the effects of the depression of the 1930s had not yet been felt. When

SELECTED URBAN POPULATION CHANGE

IN CATEGORY TWO



Fig. 29. Source: Census of Canada.

demand for wheat was reduced this area lost population as farming tended to become more mixed and livestock numbers increased in an attempt by farmers to increase their security. Farm abandonment has not been widespread here as in most arid parts of the Province, but recently farm sizes have tended to increase, a trend which is general. Consequently farm population has decreased. It is in the urban areas that increases have offset rural losses to some extent.

Urban Growth Related to Function

In two of the census subdivisions the urban population increased during the entire period; in a third, small decreases in urban population were apparent in only two five-year periods. It is in the rural areas that the causes of decline were and are likely to be found. Individual settlements have markedly varied population histories (Fig.29). All the centres were located on railway lines and were primarily agricultural service centres important for the collection of grain. Decline in population of some of these small centres is directly related to changes in the neighbouring rural areas. In the larger surrounding area the close spacing of settlements along the railways is striking, but perhaps more so is the fact that population decline is not uniform but affects some centres more than others. Those which continued to grow tended to be more widely spaced as time passed. A few centres such as Vegreville and St. Paul have grown much faster than any of the others and overshadow all the settlements actually in the area discussed here.

CATEGORY TWO

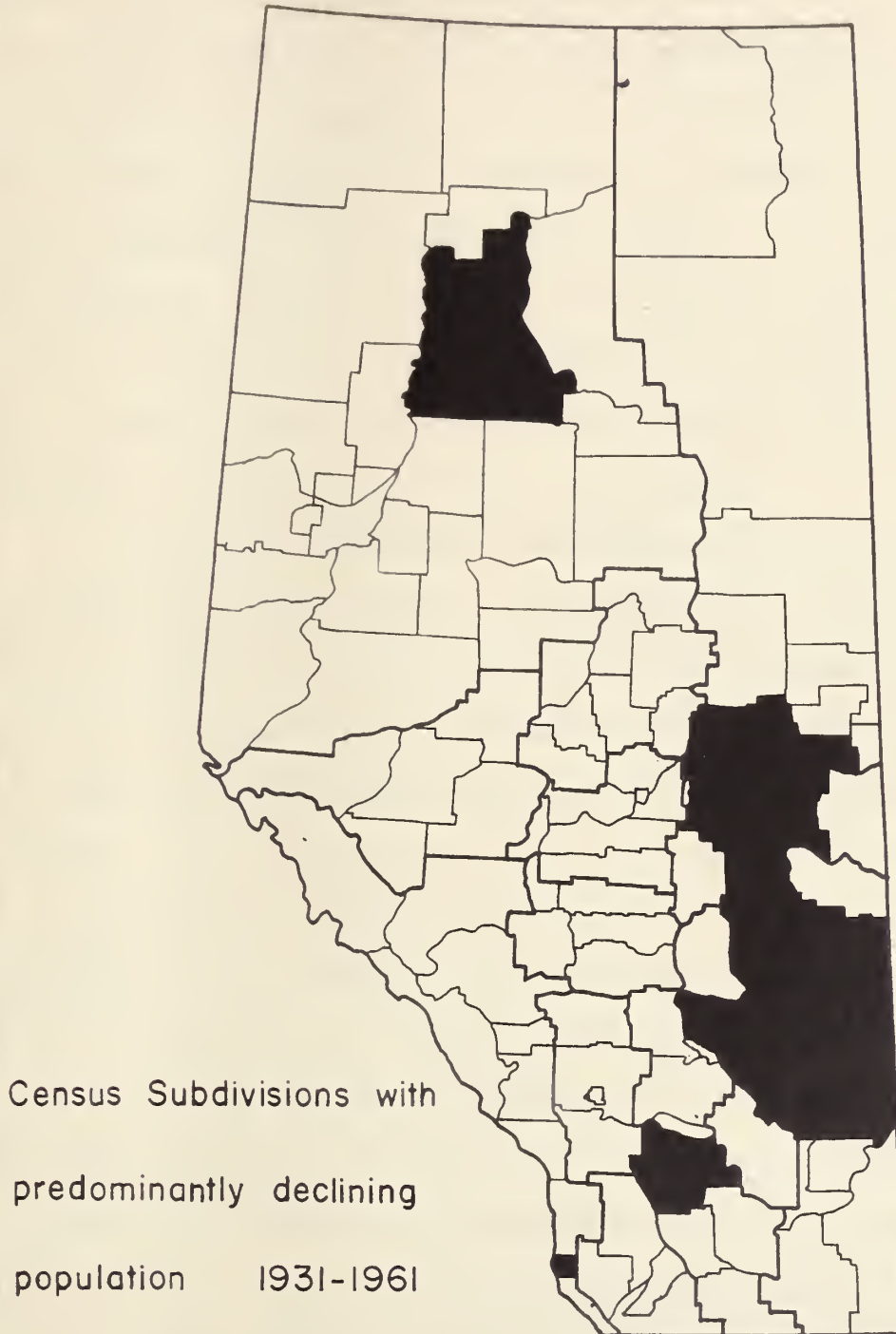


Fig. 30. Source: Data from Census of Canada. See Appendix VI.

Areas of Predominant But Not Continuous Decline

Other areas of predominant decline are included in Groups 6 and 13 (Fig. 30). Apart from a few outlying areas it is the eastern margin of the Province which has experienced decline for the greatest part of the thirty years. A belt of census subdivisions extends south from St. Paul and Smoky Lake areas to the Red Deer River valley within fifty miles of Medicine Hat, and stretches from the Alberta-Saskatchewan border west to the vicinity of Elk Island Park and Drumheller. North of Lethbridge around Vulcan, in the foothills around Frank and in the Buffalo Head Hills in the north decline has been characteristic. Exceptions to the pattern are found in the Wainwright and Vermilion River census subdivisions.

In the census subdivisions immediately south of those which had continuous decline since 1936 - discussed above - the only variation from that same pattern was between 1941 and 1946 when increases were general in much of the category. The majority of the census subdivisions where decline was predominant increased in population only during that five years as the representative graph of Group 6 suggests. Decline continued for another five years around Flagstaff and showed little change in several other areas. Around Frank the increase did not begin until 1946 but was short-lived and a rapid loss in population has continued to the present day. Continuing southwards, the remainder of the category is distinctive on account of its losses in population from the beginning of the period in 1931. In most census subdivisions this continued until 1951 as the graph representing Group 13 indicates. Again individual census subdivisions do not follow the pattern completely, but a

rising population in the last decade is characteristic of all except Provost and Paintearth.

Population Density and Variability

Densities of population are not so useful in the discussion of this category since there is no one continuous trend through the thirty years and calculations for each year would merely repeat the pattern already visible in the rates of change. It is sufficient to say that in areas other than those of continuous decline already mentioned they have been about eight persons per square mile for the total population, dropping to less than seven persons per square mile in the north and three persons per square mile in the south. If rural population only is noted the changes were greater and in the south rural density fell to less than two persons per square mile. Reference to percentage change illustrates the internal variation further (Fig. 21). The greatest changes are found in the north and south or in census subdivisions which are marginal members of their groups.

Indices of variability are low in most of the census subdivisions which make up the category. They are larger in the southern part in the Special Areas and surrounding country. The greatest of all is in the Buffalo Head Hills, south of Fort Vermilion, where the index is almost forty-five in comparison with sixteen and twenty-two in the Special Areas and one to ten in the remaining census subdivisions. In the Buffalo Head Hills the numbers of people were few and rarely exceeded two hundred. The indices of variability of population are supporting illustrations rather than sources of

further information. The graphs of population change alone indicate variability, and the indices do not suggest the amount of loss or gain in population totals.

Rural Population and Resources

Changes in rural rather than in urban population were again responsible for the overall decline. Changing opportunities in agriculture and coal mining in the component areas of this category are largely responsible for population changes. The census subdivisions are distributed throughout all the major soil zones found in the Province. Precipitation decreases southwards and the frequency of drought increases. Arable farming is more risky and the southern part of the category was the first to show the effects of drought and lack of markets. More suitable uses to which the land might be put other than for grain farming had to be found. So its population declined from 1931 rather than later.

Both the rural decline and that of certain urban settlements can be traced partly to the initial importance of wheat growing, and the subsequent difficulties in the drought-stricken years in the early 1930s. The slowing of the decline in population in recent years was associated with the building up of a new pattern of land use and increase in farm size. In some of the driest parts of the brown soil zone ranching has been reestablished, and large farms produce livestock rather than grain. The Special Areas were set up because of their special problems and the inability of their inhabitants to achieve a reasonable standard of living.

Irrigation is not common in any of the census subdivisions

which had predominantly declining population. Only Vulcan, mainly a ranching area, has some irrigation east of Lomond. Drought is not sufficiently severe to make irrigation absolutely essential in every year.

Besides the decline of population associated with farming difficulties the decay of coal mining has been of significance especially in the Frank and Coleman areas. The increased use of oil and gas stimulated by discovery in Alberta reduced coal production and employment. Commercial mining which had begun in 1886, increased with the growth of the railways, declined during the depression in the 1930s, reached another peak during the Second World War and from 1949 onwards declined as the result of competition from other fuels and increased transport costs. Decline in the use of coal has been a world-wide trend which would have been obvious in the early 1940s had the artificial conditions created by war not masked the real situation.

In the area under discussion in this category several settlements were abandoned when the demand for labour in coal mining decreased. In 1954 the town of Coleman sent a delegation to ask the Provincial Cabinet to assist in finding alternative employment for local miners. The resulting emigration from the area was recorded statistically as rural decline because most of the mining settlements were not incorporated. In 1951-1952 several small oilfields were discovered but the numbers employed were not sufficient to arrest population loss.

SELECTED URBAN POPULATION CHANGE

1931-1961



PROVOST



CASTOR



CORONATION



OYEN



CRAIGMYLE

1000



1931 1946 1961

COLEMAN



1931 1946 1961

FRANK



0

CHINOOK

Fig. 31. Source: Census of Canada.

Urban Change Related to Function

In all except the Special Areas, Frank and Flagstaff census subdivisions urban population has shown a consistent increase. In most of these exceptions the declines in urban population have been brief and insignificant. Included in the overall urban increase is a great variety in the patterns of population change in individual settlements.

In the southern areas the number of settlements is smaller and the distribution less dense. Villages are invariably located on the railway lines and are similar in function to the centres of wheat collection described earlier. The settlement can be dated from the building of the dense network of lines which brings almost the entire area within a distance of twenty miles from transport facilities. Individual patterns of change are again varied (Fig. 31). For example, Provost, Castor, Coronation and Oyen have grown relatively rapidly in contrast to some of the smaller stagnating centres.

The discovery of oil and gas throughout the whole large area around Drumheller, which recorded a drastic decline in 1951 and in which 1961 population was still smaller than that of 1931, while not employing many people directly has stimulated the growth of centres like Coronation and Viking.

The other outlying part of the category, lying in the south of the Province, has a population history which is largely similar to that of Drumheller. It lies on the Crowsnest Pass route near Blairmore and has been largely dependent on coal mining for its livelihood.

In the Buffalo Head Hills area there is no urban population

CATEGORY THREE

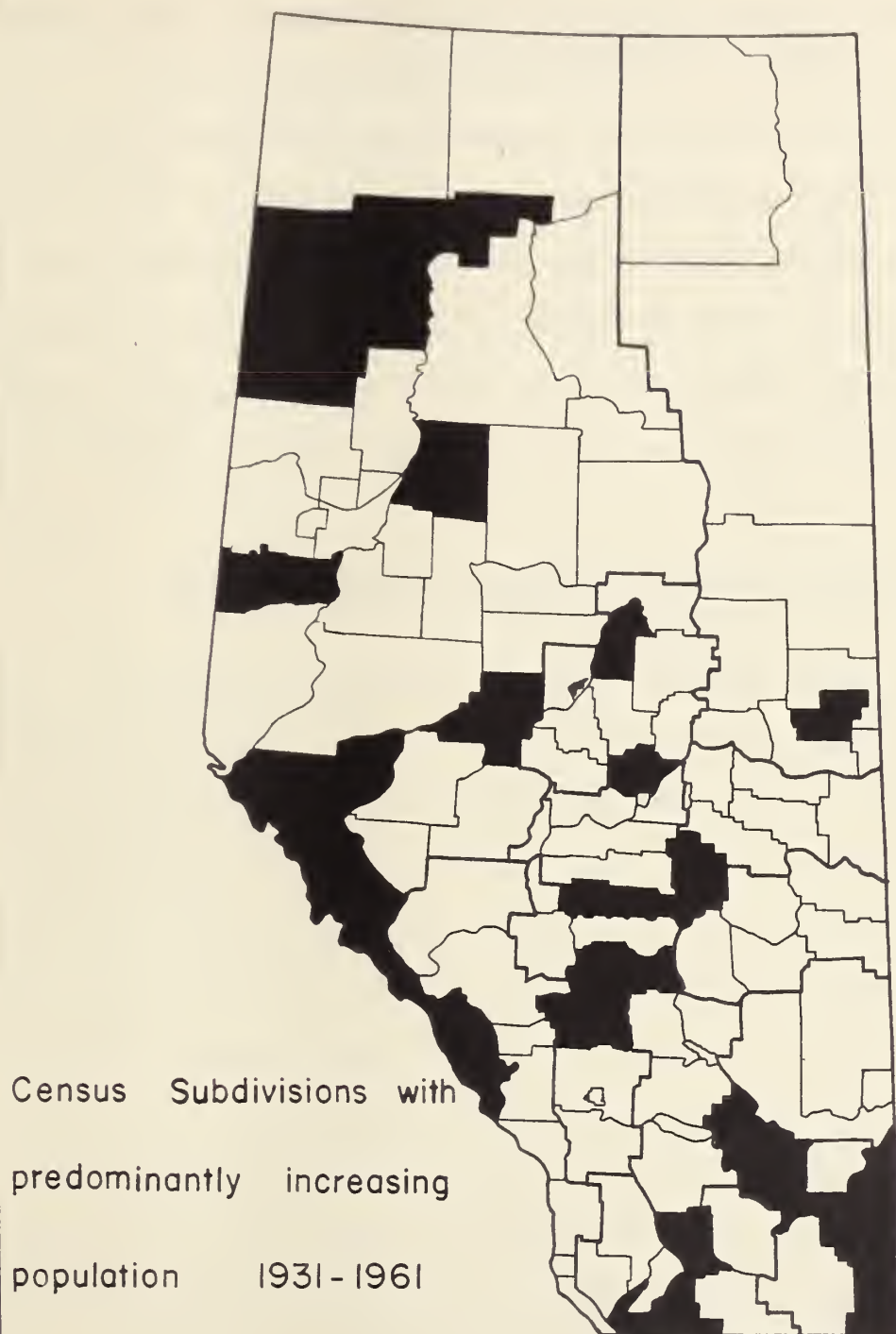


Fig. 32. Source: Data from Census of Canada.
See Appendix VI.

and most of the land is unsurveyed. The sparse population is supported by lumbering and pulpwood operations and some mixed farming although climate, soils and inaccessibility militate against the latter. Any large increase in population is difficult to envisage in this area.

Thus the areas of declining population are found mainly on the eastern boundary of the Province, and especially where drought is a problem. Maladjustment in farming techniques, such as the lack of moisture conservation practices, suitable crop rotations and over-emphasis on grain, have affected the pattern of population change which is characterised by losses in rural population and more recently by urban gains. Perhaps most important has been the problem of farm scale.

AREAS WITH ONLY ONE INTERCENSAL PERIOD OF DECREASE IN POPULATION 1931-1961

Three of the seventeen population patterns belong to this category (Fig. 32). Group 2 had its pattern of continuous growth interrupted only by the war years within the period from 1941 to 1946. In Group 14 the decrease was in the earliest years, and in Group 15 it came between 1951 and 1956. It should be stressed that in the last group, for example, although the overall pattern was one of growth, the rates ranged widely and the decrease recorded was often small as well as being short-lived. Any significant percentage changes have been positive (Fig. 21). As might be expected variability indices have a wide range; Grande Prairie County and Banff National Park have relatively high indices, and the central area low indices.

The census subdivisions which make up this category are

widely scattered throughout the Province and population densities have a very wide range of variation. In the north, densities are often less than one person per square mile. By comparison, in the south and central areas densities are high where urban centres are well developed and rural population dense.

To illustrate this category selected areas in Central Alberta Grande Prairie and Lethbridge will be considered. In each case population density, urban and rural ratios in relation to resources and urban functions will be dealt with briefly.

Central Alberta

In the central census subdivisions between Edmonton and Calgary fertile black and dark brown soils are present. Locally there are patches of other soils and grey-wooded soils are found in the west. The average rural density of population is about seven persons per square mile. However, when urban population is included the notable figure of twenty-four persons per square mile is reached in the Red Deer census subdivision. This 1961 figure is more than twice the density of 1931.

The entire area is relatively prosperous agriculturally although farming practice varies in response not only to soil or other physical differences but also to demand for special products. Dairy-ing is important near the two large centres of Edmonton and Calgary, but otherwise mixed farming is characteristic, with the emphasis towards either livestock or crops depending on the locality. The fluctuations in rural population do not mean that agriculture is not the best use of the land, but reflect changing economic conditions.

The changes in individual urban centres have not been uniform

SELECTED URBAN POPULATION CHANGE IN CENTRAL ALBERTA



PONOKA



WETASKIWIN



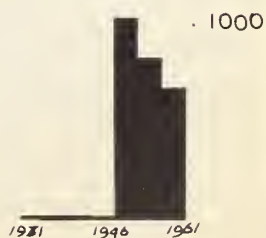
CAMROSE



LEDUC



DEVON



CALMAR

Fig. 33. Source: Census of Canada.

but the increase in total population is clear. Oil was found north-east of the city of Red Deer and has been important in adding to the city's population growth by bringing a demand for extra services. In addition it has stimulated manufacturing industry. Similarly in the Leduc and Camrose areas oil has affected population directly in the founding of new towns such as Devon, and by encouraging manufacturing industry and the expansion of services in towns already in existence. In the Leduc area population increased by several thousands between 1946 and 1951, and again between 1951 and 1956. Towns like Devon which are the creation of oil companies tend to exhibit a rapid increase in numbers followed by stabilisation and decrease as the oilfield they serve becomes more fully developed. Devon actually lost population between 1956 and 1961, and Calmar, southwest of Devon, has been declining since its incorporation in 1951. Larger centres such as Leduc, Camrose, Wetaskiwin and Ponoka continue to grow (Fig. 33). They all have a variety of functions and serve the surrounding areas which are important exporters of wheat, dairy products and hogs.

The Lethbridge and Grande Prairie Areas

The Lethbridge census subdivision has a high density of population. Rural density has decreased slightly between 1931 and 1961, but total density has almost doubled in the same years. Again the urban-rural designation is misleading for it is mainly the decline of small unincorporated coal mining settlements which is reflected in the rural changes. The agriculture of the area is similar to that near Taber and has undergone the same changes. Irrigated farming is most

CATEGORY FOUR

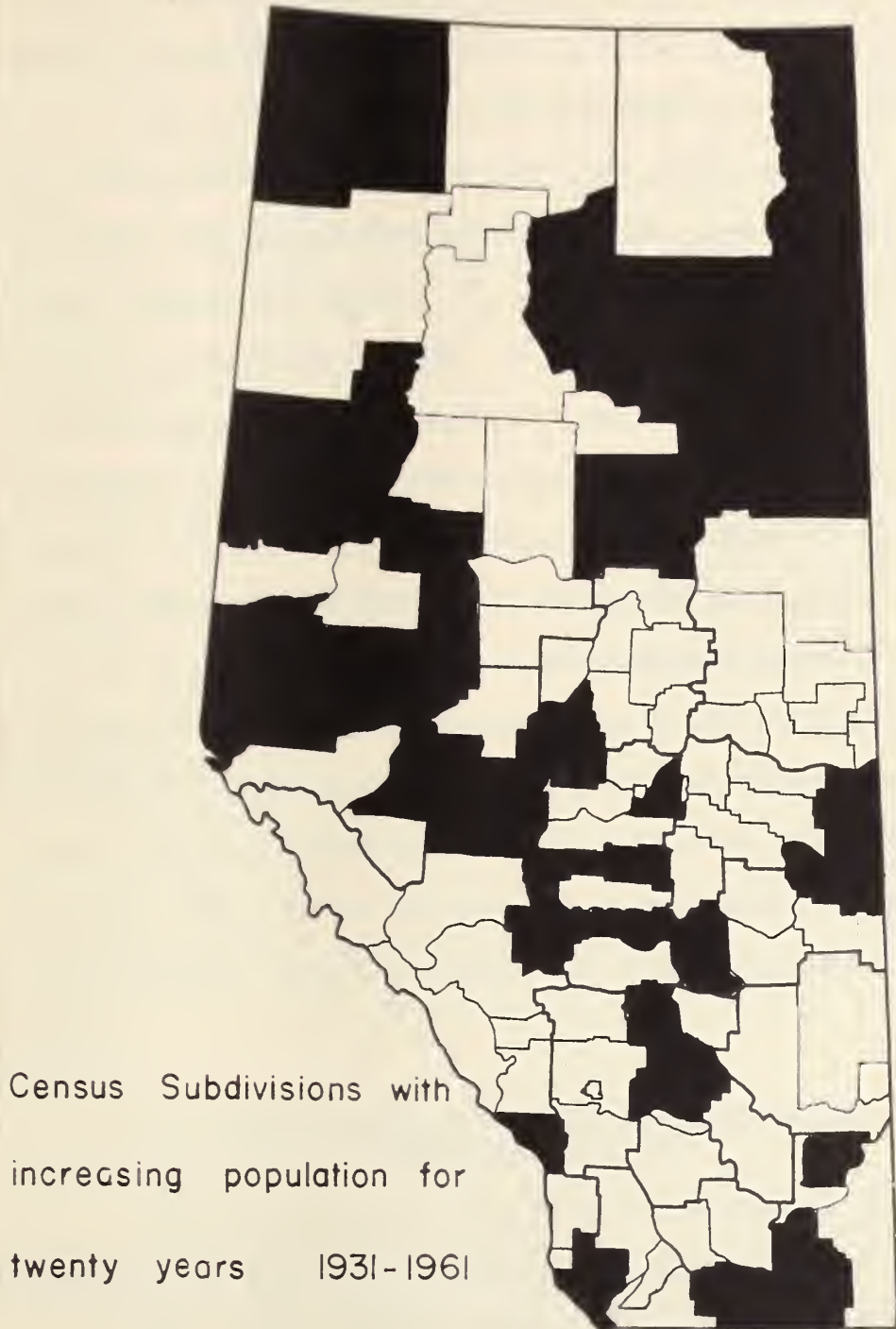


Fig. 34. Source: Data from Census of Canada.
See Appendix VI.

important. Grain, feed crops for livestock, vegetables for canning and sugar beet are all important. Lethbridge itself has grown as the centre of a large region, and besides its collecting and distributive functions it has developed some primary industry - based mainly on agricultural products.

Grande Prairie differs from surrounding areas. Almost all of it is suitable for agriculture and so its rural density of population is higher than neighbouring districts. The growth of Grande Prairie itself has been outstanding. It has been important since it was a terminal point on the railway. As agriculture developed it became a collecting and distributing centre and later administrative functions were added. During the 1950s oil and gas exploration increased and related services developed rapidly. The only decrease in population experienced by Grande Prairie was during the war years.

In summary, the timing of the five-year period of decrease in population in the three groups making up the category was largely the result of wartime demands on manpower, the varying capacity of land of marginal fertility to support population under fluctuating economic conditions and the more recent development of tourism in areas otherwise unable to support more than a negligible number of people.

AREAS IN WHICH POPULATION DECREASED DURING ONE DECADE, 1931-1961

As in the previous category no one pattern of population change is found throughout. Six of the seventeen Groups identified in the previous chapter satisfy the demands of the category (Fig. 34), but the years of decline are not the same in any of them. In

Group 1 (p. 34) after an increase for ten years each five-year period showed a trend the reverse of that in the previous five years. In Group 4 (p. 35) a decade of increase was followed by a five-year decrease, and this pattern was repeated in the next fifteen years. In Group 5 (p. 35) numbers fluctuated widely although the decade 1941 to 1951 experienced continuous increase. In Group 8 (p. 36) rapid change was followed by an increase until the years 1956 to 1961. Group 7 (p. 36), after an initial growth had declining population for a decade followed by increase from 1946 until 1961. Group 11 (p. 38) is characterised by a twenty-year increase followed by decrease 1951 to 1961. Group 16 (p. 40) is characterised by a decrease 1941 to 1951. Since thirty-seven census subdivisions are included in the category it is not surprising to find that they are scattered throughout the entire Province. To avoid discussion at the census subdivision level again specific examples will be used to illustrate general comments.

The Peace River Area

The area north of Grande Prairie County and the Peace River, and west of Peace River town shows the major features to be expected in varying degree in the other northern census subdivisions belonging to the category. The area also includes three of the six groups in the category.

Much of this area is in the grey-wooded soil zone although degraded black soil is locally important in the development of agriculture - somewhat unexpected at such a latitude. The climate is not unlike that found just north of Edmonton. Annual precipitation, which is about 15 inches, decreases northwards. Although

the frost-free period is significantly shorter than that of areas farther south some grains are able to mature. The vegetation of the Peace River valley is mixed woodland and grassland, and it was open parkland which attracted the first settlers.

Judging from the amount of land in the various census subdivisions unsurveyed for farm settlement, uneven population distribution and the varying texture of the transport network a large range of population densities is to be expected. This varies from less than one person per square mile to more than five persons per square mile in individual census subdivisions. For this reason densities calculated for the wider area are not of much value, especially since different years have been the most significant in the population history of census subdivisions in the different groups.

Although there are some areas of parkland, much of the land is heavily wooded and expensive to clear. This is true of the area south of the Wapiti River as well as a large part of the remaining outlying districts. The timber is not all of commercial value but forest products support a considerable proportion of the sparse population outside the farmed Peace River valley where wheat and mixed farming are important.

Settlement was rapid in the 1930s, although the Peace, Fairview and Spirit River census subdivisions experienced a slight decrease in the latter part of the decade. Decrease was general 1941 to 1946 and was related to the decline in immigration to Canada and to the Province, and to wartime demands on manpower. In contrast to the earlier rapid rural growth, urban growth was much later. Relatively very large urban increases occurred in the Spirit River area from 1946 onwards, and in

the Peace and Fairview areas after 1951. In these same areas, unlike the surrounding improvement districts, totals continued to increase until the last five years when population was lost. As before, it is the addition to the urban population which has increased the overall totals or has prevented larger decrease. Relatively less fertile soils which were cleared in earlier years when their characteristics were not well known can not support settlers on small farms. New clearing has been limited and enlargement in farm size has taken place.

Southern Plains Area

Along the southern border of the Province a ten-year decrease is also characteristic. Towards the east the decrease was rapid from 1936 onwards and was slight almost until 1951. Warner County lost some people in the late 1930s but apart from this the decline in the remainder of this southern area came in the last decade. The rapidly increasing number of persons in the Forty Mile census subdivision is exceptional. The other exception is Waterton Lakes National Park which lost population initially and after fluctuations is now increasing. The 1961 statistics are not yet available for the park, but population in it and in adjoining areas to the north is very small.

The soils of the more densely populated census subdivisions are brown in the east and dark brown in the west. Aridity is a problem which is offset to some extent by irrigation. Extensions to the irrigated area, using water from the St. Mary and Milk rivers, are planned. East of Cardston wheat growing is dominant. East and west of the wheat growing area livestock is an important source of farm income. In the driest eastern parts livestock is of major

importance.

Percentage population changes have not been large in this southern area at any time during the thirty years under discussion. Most of the changes involve few people, and they are mainly rural. The recent rural decline is associated with the adjustment of land use practices. Urban population on the other hand has grown continuously throughout the period. The few scattered oilfields have not been responsible for any large changes in population.

Small changes in relatively large total numbers are reflected in low indices of variability. For example, the Warner area with a low index contrasts in this respect with the sparsely population mountain area which has a very high index of variability and where the variation in total population was from 26 to 167 persons.

In the central part of the Province areas in this category are well scattered. Most of them vary only slightly from the surrounding census subdivisions found in the previous category. This variation results from the occurrence of the decrease a few years earlier or later. For this reason they will not be discussed in any detail.

AREAS WHERE POPULATION INCREASE AND DECREASE WERE EQUALLY IMPORTANT, 1931-1961

The population patterns of the census subdivisions in this category tend to take one of two forms. The first, Group 12 (p. 38), is one showing a decade of increase followed by a decade of decrease, and the remaining decade divided into two five-year periods also of increase and then decrease. The other, Group 3 (p. 35), is similar in pattern until 1936. From that date in Group 3 increase only lasted for five years and the decade from 1951 to 1961 is one of moderately

CATEGORY FIVE

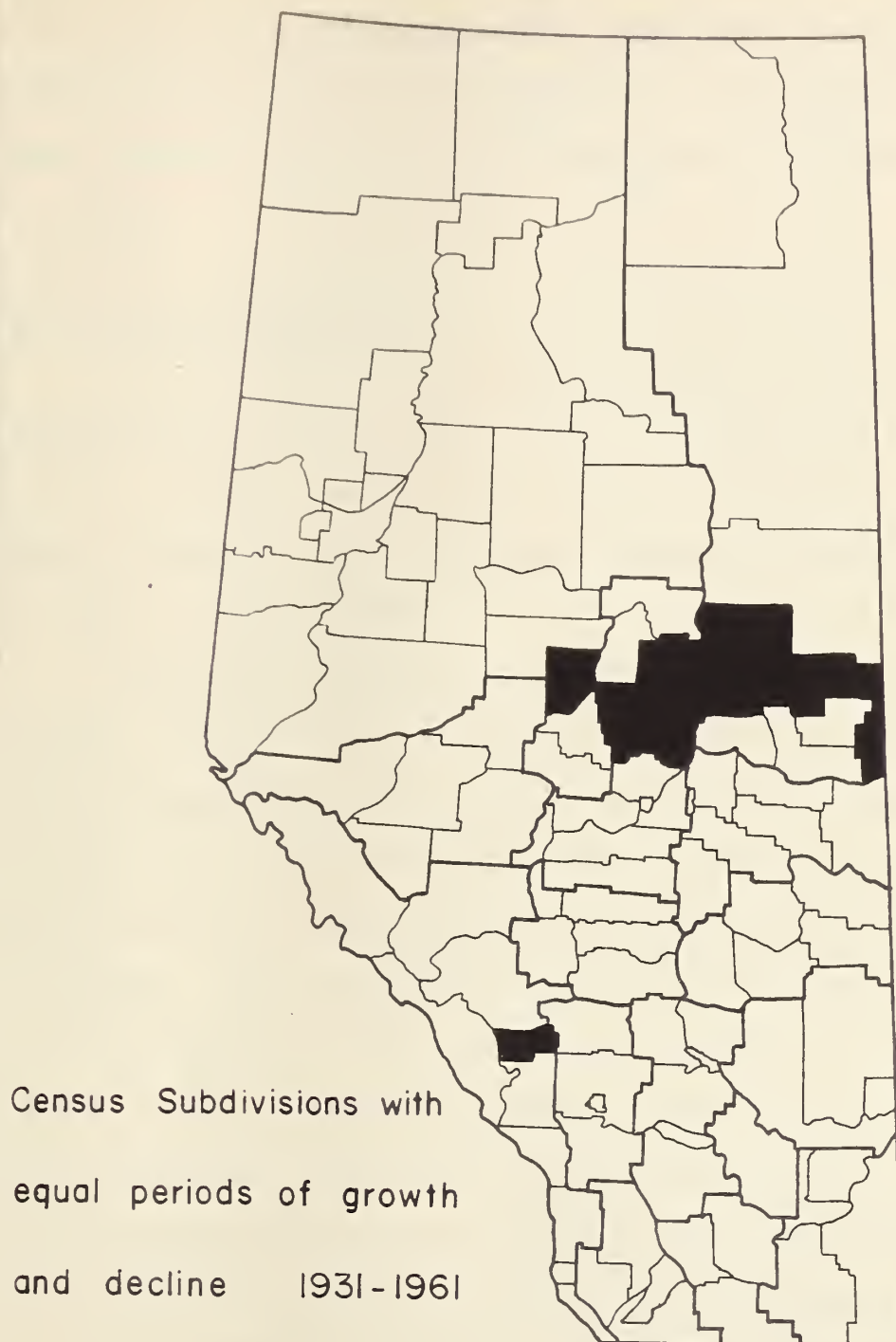


Fig. 35. Source: Data from Census of Canada. See Appendix VI.

rapid increase.

The locations of the census subdivisions which make up the category are scattered (Fig. 35). One larger area with characteristics of equal activity of growth and decline extends from Westlock and Thorhild County eastwards through Athabasca to the Provincial boundary. Another small part lies in the foothills between Banff National Park and Didsbury.

The Athabasca-Cold Lake Area

The area from Cold Lake westwards lies on the fringes of the parkland mainly in the grey-wooded soil zone although around Athabasca and along the southern margins degraded black soils occur. Timber, oil and gas resources and mixed farming are the main means of support of the population.

Densities of population vary widely from one census subdivision to another, from less than one person per square mile to more than eight per square mile. Thorhild County has had incorporated settlement only since 1951, and in the remainder urban population is a minority. Again the presence of unincorporated nucleated settlements must not be forgotten. There are several post offices and railway stations on the line which runs north to Waterways, for example, and they usually have some retail function even if only on a very small scale. Westlock and Athabasca census subdivisions have increasing urban population as in many other parts of the Province and for the same general reason. This is a livestock producing area with some cash cropping, and parts of it are not especially fertile.

POPULATION CHANGE IN ALBERTA 1956-1961

BY CENSUS SUBDIVISIONS



Fig. 36. Source: Census of Canada.

had growing populations in keeping with the Provincial pattern (Fig. 36). Those which have decreased have a widespread distribution (Fig. 36) and neither increases nor decreases can be accounted for by reference to any single cause.

Most of the areas of decline have been mentioned already and lie on the south central border of the Province, around and especially north of Lesser Slave Lake, west of Edmonton stretching into the foothills and mountains as far as the boundary of Jasper National Park, and along the United States border to the north and west of Lethbridge. Most of these census subdivisions have small totals of population, and in many no urban population is recorded.

Percentage decrease varies (Fig. 21). At one extreme is the area east of Jasper Park with a loss of over 70 per cent, and at the other Newell County which lost only 0.6 per cent. In nearly every case where urban population is present it has increased. Only one census subdivision out of thirty-four affected by negative changes experienced reduction in urban population.

Several reasons for changes may be suggested. The very high percentage decrease is readily understood when it is noticed that this occurred in the area around Coalspur and Luscar, formerly dependent on coal mining. Later, fewer people were supported by agriculture and forest uses. Changes in agriculture continue to affect population patterns. In several areas the numbers affected by the changes are very small - as few as fifteen people - and in such cases personal choice can be postulated to provide the explanation with as much justification as changes in provincial economy.

Positive changes are widespread. Natural increase is the most

important contributor to this growth, although immigration is also important. A peak was reached in 1957 when more than 20,000 immigrants to Canada gave their destination as Alberta, but subsequent decline in immigration will no doubt affect future statistics.

Thus there is a tremendous local variation in the pattern of population change, and for a variety of reasons. Since major causal factors are influential throughout the Province varying only in degree several are summarised in the following chapter as they affect the Province rather than individual census subdivisions.

CHAPTER V

SOME INFLUENCES ON POPULATION CHANGE IN ALBERTA

Certain factors responsible at least in part for changes in the patterns of population in census subdivisions have been discussed already. The increasing numbers of people living in urban centres and the widespread decline in the rural population which accompanied urbanisation in much of the Province were seen to be important. The changing character of agriculture was noted in passing but since fluctuations in this part of the economy are major causal factors of population change, additional discussion is necessary. This is followed by a brief consideration of the part played by the development of minerals and transport, and by further reference to increasing urbanisation.

CHANGES IN AGRICULTURE IN ALBERTA AND THEIR EFFECTS ON POPULATION

During the last thirty years some agricultural trends which affect population distribution in Alberta include an increase in the size of the average farm, a decrease in the number of farms, an increase in the total area farmed and a decline in farm population (Table II). The striking reduction in the percentage of the total population which lives on farms is in marked contrast to the steadily growing population totals.

TABLE II - FARM POPULATION AND RELATIVE FARM SIZE

Year	Pop- ulation	Per cent living on farms	No. of farms	Per cent of area in farms	Average farm size
1931	731,605	51.3	97,408	24.5	400.1
1941	796,169	48.2	99,732	27.2	433.9
1951	939,501	36.7	84,315	27.9	527.3
1956	1,123,116	29.6	79,424	28.9	578.8

Source: Census of Canada, 1956.

Annual Report of Dept. of Agriculture 1960.

In spite of the increased agricultural acreage the number of farms is appreciably less than it was in 1941. The explanation lies in the greater average size of farms in the Province, especially after 1941 when the majority of farms instead of being less than 200 acres in area were over 300 acres (Table III).

TABLE III - PERCENTAGE OF FARMS WITHIN SIZE GROUPS

Size of Farms (Acres)	Per Cent 1931	Per Cent 1941	Per Cent 1951	Per Cent 1961
1 - 4	0.7	0.8	0.7	0.5
5 - 10	0.8	1.0	1.3	1.2
11 - 50	1.3	1.6	1.7	1.8
51 - 100	1.8	2.1	1.7	1.6
101 - 200	40.4	36.9	25.5	22.0
201 - 299	3.4	3.9	4.8	4.8
300 - 479	26.7	26.6	30.4	30.5
480 - 689	9.7	10.3	12.2	12.7
690 - 959	9.4	9.6	11.4	12.7
960 - 1297	5.8	3.3	4.4	5.0
over 1297		3.9	6.0	7.2
Total No. of Farms	97,408	99,732	84,315	79,424

Source: Census of Canada, 1956, 1961.

The use of the land too has changed since 1931. Wheat has been losing its predominant place as acreages in this crop decreased throughout the period. Oats and barley showed similar trends while tame hay and sugar beets show the greatest increases. Increasing numbers of livestock indicate their added importance (Table IV).

TABLE IV - CROP ACREAGES AND LIVESTOCK NUMBERS IN ALBERTA
1931 TO 1960

Crop Acreages	1931	1941	1951	1956	1961
Wheat	7,942,856	6,555,840	6,423,899	5,295,675	3,060,000
Oats	2,465,688	2,856,563	2,854,008	2,934,733	2,730,000
Barley	710,472	1,579,048	3,040,775	3,606,192	3,490,000
Mixed Grain	16,383	38,694	80,973	189,312	275,000
Flax Seed	30,519	133,033	135,394	511,053	690,000
Tame Hay	296,993	602,419	1,206,037	1,614,228	2,200,000
Potatoes	36,256	24,539	17,730	19,451	20,000
Sugar beets	11,937	23,267	36,026	36,681	41,400
<u>Livestock numbers</u>					
Horses	731,739	649,216	261,133	154,672	115,000
Cattle	1,124,615	1,342,130	1,563,019	2,449,211	2,665,000
Sheep	785,929	674,918	330,503	404,820	555,000
Pigs	1,052,128	1,705,528	930,714	1,211,508	1,385,000

Source: Census of Canada, 1956, 1961.

Changing Farm Size in Alberta 1931-1961

The suitability of a particular location for the crops shown in the table or other crops will help to cause variation in farm size which in turn influences the numbers in the farm population. For example, in the fertile black soil area around Red Deer well-established mixed arable and livestock farms average 600 acres. In the irrigated

LOCATION OF SPECIAL AREAS ALBERTA 1938

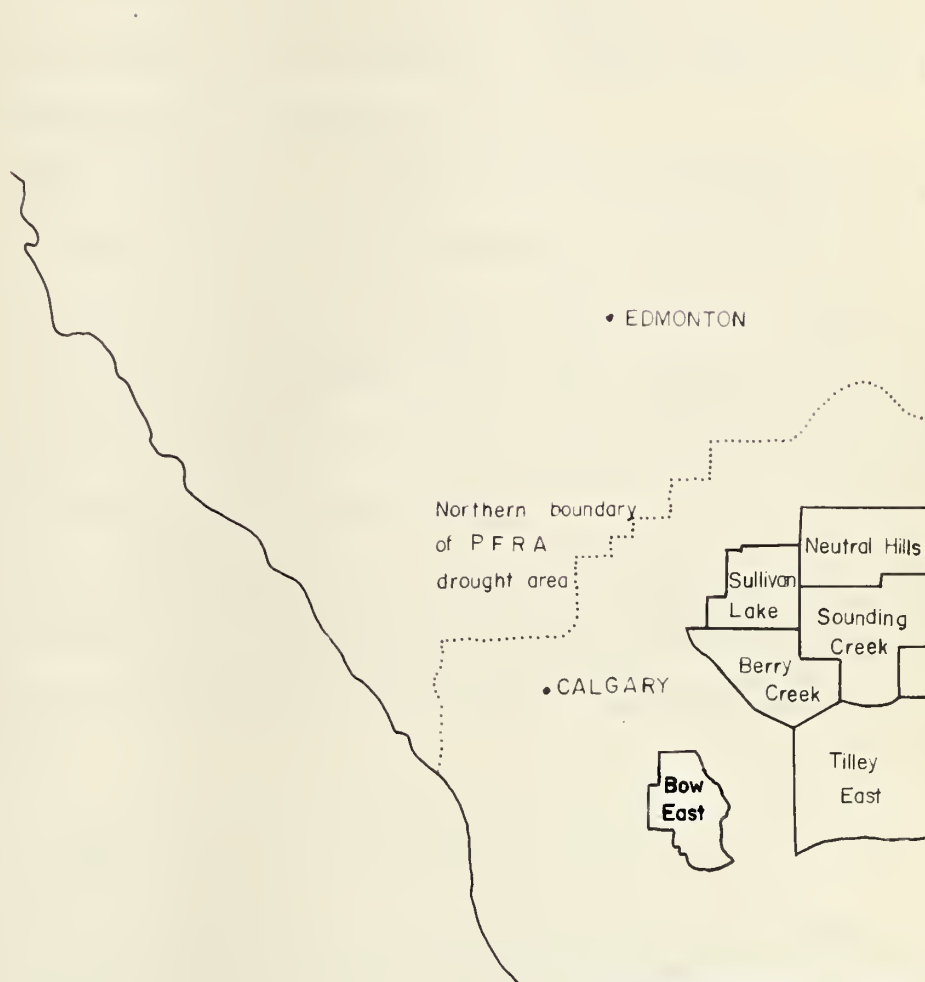


Fig. 37. Source: A.S. Stewart and W.D. Porter, Land Use Classification in the Special Areas of Alberta.
p. 26.

southern districts farms commonly are much smaller. In the St. Mary-Milk River area the Colonization Branch of the Federal Government made 177 allocations of land for resettlement between 1951 and 1959, and the majority of these were quarter sections or 160 acres. If there is a demand for specialty crops farms of less than 100 acres can provide an adequate living. Now vegetables and crops for canning are being grown under contract to distributors and manufacturers of agricultural products, but farmers in the irrigated areas have turned to mixed farming awaiting the development of markets.

Often, small farms are found along the fringes of better farmland, for example in areas of grey-wooded soils near the foothills. In these areas the farms are small because farmers lack the capital needed to clear larger areas. Uneconomic farms are a problem in the Province, and to increase all farms to an economic size would probably lead to further decrease in the farm population.

Rural population numbers already have been shown, in various parts of the Province, to be closely related to farm size. Further examples illustrate some of the conditions encouraging these areal differences.

The Special Areas

The Special Areas¹ (Fig. 37) in the arid eastern margin of the

¹ The Alberta Special Areas Act, 1938, was designed to apply to areas of the Province which "include a considerable amount of land which by reason of insufficient rainfall, inferior quality of soil and other causes, cannot by the use of ordinary methods of agriculture be made to yield over a period of years produce in sufficient amount to provide the persons farming such land with the means of livelihood," and in which "a large proportion of such lands has been abandoned by settlers and investors due to their inability to secure an adequate

Province illustrate the link between farm size and population and farming changes. In 1956 the average farm in these areas was 1,727 acres with a range from 630 to 4,269 acres.² Various studies have been made and suggestions of the ideal farm size show a surprising range of 480 to 1,522 acres.³ The lowest estimate did not include grazing land which has been proven necessary. Interviews carried out locally in connection with Rust's study indicated that most farmers felt that two sections, one for crops and one for grazing, were desirable.

The Special Areas are examples of rapidly and almost continuously decreasing rural populations during the last thirty years. When the difficulties of the physical environment for grain growing year after year are realised it is not surprising that it soon became evident that the land was better suited to other uses. Precipitation is low and rarely exceeds 13 inches annually, 7-9 inches of which can be expected in the growing season. Potential evapotranspiration exceeds these amounts. The relatively high July temperatures coupled with the fact that most of the rainfall is received between May and

livelihood or compensation therefrom." For further information see A. Stewart and W. D. Porter, "Land Use Classification in the Special Areas of Alberta," Dominion Department of Agriculture, Pub. No. 731, Tech. Bull. No. 39, Ottawa, 1942, Appendix I.

²R.S.Rust, An Analysis and Evaluation of Land Use in the Special Areas of Alberta, unpublished M.A. thesis, University of Alberta, Edmonton, 1957, pp. 264.

³W. Darkovich, An Appraisal of Dryland Farming in the Special Areas of Alberta, Dominion Department of Agriculture, Economics Division, Ottawa, 1954.

the middle of July means that crops are liable to be dried out. Frost is not a major factor in the area, the soils of which are mainly loams in the brown and dark brown soil zones. Although there is little leaching soil erosion can be a problem especially where a heavy grass cover can not be maintained.⁴

In 1870 there were few settlers in the area, but after the Dominion Government took over the administration its desire to create a market for eastern manufacturers caused it to give little heed to Palliser's warning and the best use of the land.

Figures quoted by Rust emphasise the decline. In 1906 there were 187 people in the Special Areas, in 1921 this total had risen to more than 26,000 as the result of a flood of immigrants. Emigration caused largely by drought reduced population to just over 19,000 in 1926. The effects of wetter years and higher wheat prices in 1927 and 1928 brought the 1931 total to over 20,000 again. Drought and low prices for agricultural produced in the 1930's caused a decline to less than 15,000 in 1936, and less than 12,000 in 1941. The Second World War had little effect on rural population, possible because the majority of persons were in older age groups. However, the decrease continued until the population was only 9,542 in 1946 and 8,430 in 1951. Since then the downward movement has been slowing up and the urban population has been increasing.

⁴ A. Stewart and W. D. Porter, "Land Use Classification in the Special Areas of Alberta," Dominion Department of Agriculture, Pub. No. 731, Tech. Bull. No. 39, Ottawa, 1942.

So much land was forfeited in the 1930s because of non-payment of taxes, and the inability of many people who stayed in the area to maintain a decent standard of living that the Special Areas were set up by the Government as early as 1927. Much of the unoccupied land was bought or leased by people who had stayed in the area so that the distribution of settlement became more scattered and services were difficult to maintain. At first the Department of Lands and Forests had full control over schools, roads, hospitals, taxes and public lands. Any unauthorised new settlement was forbidden. Non-arable public lands were leased only for grazing and the regrassing of abandoned areas was encouraged. In 1946 the administration of the Special Areas was transferred from the Department of Lands and Forests to the Department of Municipal Affairs in the hope of restoring local government. The increase in the knowledge of more advanced agricultural practices, improved varieties of grain and the availability of larger tracts of land for cultivation and grazing have made farming in the area less risky. Assistance from the Prairie Farm Rehabilitation Association to improve water supply and the Prairie Farm Assistance Act in providing payments on cropland with very low yields make the area more attractive to farmers. Although the general movement from agricultural areas into urban centres has affected this as other areas, a better understanding of the countryside and greater security felt by farmers is stemming the excessive loss of population.

Irrigation

Irrigation in the area has been practised in a relatively small

percentage of the total acreage of improved land in farms. This does not represent the true importance to the agricultural economy of irrigation either in terms of increased stability of income or in crop yields and more intensive settlement. Today rural population density in the area south of Lethbridge is 3.5 persons per square mile. It is forecast that a population density of 48 persons per square mile could be supported if the St. Mary extension were to be carried out in this area. The added area would be 345,000 acres on which, it was suggested, 25,000 persons could be supported by agriculture and another 147,000 persons, in town and country, by service industries.⁶ Progress in actual fact has not been so rapid as forecast, and changes on such a scale are difficult to envisage.

The reluctance of farmers to make use of irrigation facilities if there is a possibility of sufficient rainfall to grow reasonable crops is illustrated by the statistics of rainfall and irrigated acreages (Table V) in the Taber Irrigation District throughout the thirty-year period.⁷ Obviously, since the degree of drought cannot be known beforehand a year with less rainfall than the previous one will not always show an increase in the irrigated acreage especially if drought came at a time in the growing season which made irrigation useless. However, there does seem to be a sufficient number of years when there is a correlation to make the initial statement valid.

⁶ Oldman River District Planning Commission, City of Lethbridge General Plan 1960. Part II, Population and Economic Activities, Lethbridge, 1960, pp. 71.

⁷ Taber Irrigation District, 43rd Annual Report and Financial Statement, 1961, pp. 36.

TABLE V - FARM ACREAGE, ACREAGE OF SUGAR BEET
AND SUMMER RAINFALL, 1931-1961

Year	Rainfall April-October	Farm acreage irrigated	Acreage of sugar beet
1931	7.82	19,914	3,847
1932	14.22	16,998	4,347
1933	12.91	18,854	4,298
1934	10.54	18,490	4,295
1935	8.03	19,471	4,156
1936	6.96	19,123	4,278
1937	5.65	21,296	4,523
1938	8.64	20,880	4,908
1939	8.53	18,485	4,972
1940	9.45	21,391	5,552
1941	9.75	15,103	5,485
1942	12.96	14,108	6,521
1943	4.17	20,935	6,989
1944	9.63	21,325	7,026
1945	9.20	21,218	7,239
1946	12.84	21,222	7,241
1947	13.74	19,141	7,256
1948	9.39	17,720	7,434
1949	6.79	21,533	7,548
1950	6.74	21,864	7,925
1951	20.62	7,324	7,745
1952	8.69	21,281	8,491
1953	12.32	22,503	8,128
1954	9.29	27,224	8,498
1955	11.36	20,530	9,091
1956	9.68	21,009	9,957
1957	7.30	21,579	9,899
1958	9.33	22,854	10,472
1959	11.32	23,426	9,709
1960	8.07	29,448	12,087
1961	8.25	30,747	11,514

Source: Taber Irrigation District, 43rd Annual Report and Financial Statement, 1961.

The converse tends to be true and wetter years generally are associated with a drop in the number of irrigated acres. The acreages of sugar beet have been included to show the increasing popularity of the crop which has given rise to a flourishing local processing industry.

There is great variability in summer rainfall and the steady increase in the acreage of sugar beet indicates that fluctuations in irrigated acreage tend to affect pasture or cereal crops rather than sugar beet or other specialty crops such as vegetables.

The significance of these figures to a discussion of population is evident when it is realised that this area and the Special Areas are not unlike in physical environment, in which lack of precipitation is perhaps the dominant feature, and yet they support dissimilar population densities. Thus differences in land use bear a close relationship to differences in population numbers. It is changes within a particular type of land use through time which gives variation to the pattern of population change throughout a given period. For example, the introduction of irrigation techniques or the withdrawal of land from arable use and the encouragement of grazing resulted in changes.

Planning in Agriculture

Turning to the central and northern parts of the Province, the effects of varied land use on population numbers and the use of planning in farming is evident. Since 1958 a Central Alberta Farm Business Association has been set up with Government encouragement and includes census subdivisions Numbers 55 and 64, from south of Innisfail to just north of Lacombe. The reasons for the interest shown by farmers

include the fact that farmers are receiving relatively lower prices for many of their goods and at the same time the cost of items they must use in production has risen. New techniques in food production methods have forced individuals to change. The Association presented a financial summary of farms and various measures which farmers could use to evaluate their management policies.⁸ With the application of knowledge gained from studies of this sort it is often found that the most productive use is not being made of labour, for example, or that a larger acreage might be more economic. With an increase in farm size the farm population almost invariably decreases and it is unfortunate that numbers of farm labourers are not included in the reports of the Association.

Farms in this part of Central Alberta average almost 600 acres. Barley, the most important crop, is followed in a five-year rotation by summerfallow, tame hay, oats and pasture. Dairying is an important source of income along with beef and poultry. Farmers in this area, which is popularly accepted as being one of the best agricultural areas in the Province, have a relatively low income from their labour.

Agricultural Potential in Northern Alberta

Finally, as an illustration of problems of farming in northern areas and of the agricultural potential of the grey-wooded soils the

⁸ Alberta, Department of Agriculture, Farm Economics Branch, 1960 Farm Management Analysis Report - 60 Farms, pp. 20.

area around Grande Prairie is cited. Population increased in the area until the last decade when rural numbers dropped although the urban population, especially in Grande Prairie, increased considerably. Information in the Grande Prairie and Sturgeon Lake soil survey reports suggested that the number of farms was increasing up to 1951 and judging from the increased number of farm operators reported in the 1956 Census the trend continued in the Grande Prairie County census subdivision.⁹ No information from the 1961 Census is yet available. The percentage of the occupied land which is improved has grown steadily. Grain farming is prevalent with wheat, oats and barley occupying most of the cropped acreage. Livestock is important although numbers have fluctuated.

This area has problems common to much of the land in the Province which is potentially suited to agriculture but has not yet been completely assessed. Tree cover is the major impediment to agricultural development. The natural vegetation is a mixed tree cover in which aspen poplar is dominant. There are also fairly extensive parkland and low shrub areas with varying amounts of grassland. The grassland has always been most attractive to settlers because it required less clearing.

The cost of clearing forested land varies with the size and density of the trees and can be carried out relatively quickly with modern machines but the cost is beyond the means of many new settlers. For this reason forested areas of good soils have not been cleared

⁹ D.M. Odymsky, A. Wynnyk and J.D. Newton, Soil Survey of the Grande Prairie and Sturgeon Lake Sheets, Report No. 18, Alberta Soil Survey, Edmonton, 1956, pp. 111.

while less fertile but more easily cleared areas have been put into production. Accessibility and distance to market are problems in much of the area.

Even with a fairly short growing season and with the risk of unseasonable frosts satisfactory agriculture is possible with attention to soil conservation. Crops must be selected carefully and the most effective use must be made of rainfall. Water supplies must be found for livestock and this is sometimes a problem. Although the inherent fertility of some of the grey-wooded soils in particular is lower than that of other soils in the Province they are suitable for forage crops. Soils developed under woodland are generally low in plant fibre, humus and nitrogen, and often have a heavy textured sub-soil. For this reason the maintenance of an adequate supply of organic material is essential, and this can be furnished by planting to pasture.

The size of the average farm has increased in this area too (Table VI).

TABLE VI - NUMBER OF FARMS, ACRES OCCUPIED AND ACRES IMPROVED IN THE GRANDE PRAIRIE AND STURGEON LAKE SHEETS OF THE SOIL SURVEY, 1916 TO 1951

Year	No. of farms	Areas occupied	Acres/farm	Acres/farm improved	Per cent occupied land improved
1916	365	101,300	277	62	22.4
1921	972	256,465	264	84	32.0
1926	754	254,440	337	123	36.5
1931	1,674	469,233	280	107	38.1
1936	1,657	492,164	297	126	42.4
1941	1,715	538,468	314	145	46.1
1946	1,506	534,947	355	178	50.2
1951	1,590	600,914	378	203	53.7

Source: W.M. Odynsky, A. Wynnyk and J.D. Newton, Soil Survey of the Grande Prairie and Sturgeon Lake Sheets, Report No. 18, Alberta Soil Survey, Edmonton, 1956.

Fig. 38.

ALBERTA COAL AREAS

- | | |
|-----------------|--------------------------|
| 1. Vauxhall | 25. Champion |
| 2. Sexsmith | 26. Taber |
| 3. Halcourt | 27. Pakowki |
| 4. High Prairie | 28. Milk River |
| 5. Slave | 29. Lethbridge |
| 6. Rochester | 30. Magrath |
| 7. Paken | 31. Pincher Creek |
| 8. Whitecourt | 32. Crowsnest |
| 9. Pembina | 33. Oldman |
| 10. Edmonton | 34. Highwood |
| 11. Tofield | 35. Penisko |
| 12. Wetaskiwin | 36. Cascade |
| 13. Wainwright | 37. Panther |
| 14. Castor | 38. Red Deer |
| 15. Ardley | 39. Clearwater |
| 16. Big Valley | 40. Rocky Mountain House |
| 17. Shearness | 41. Nordegg |
| 18. Carbon | 42. Saunders |
| 19. Drumheller | 43. Mountain Park |
| 20. Empress | 44. Prairie City |
| 21. Steeveville | 45. Brule |
| 22. Gleichen | 46. Smoky River |
| 23. Brooks | 47. Coalspur |
| 24. Redcliff | |

ALBERTA COAL AREAS AND INSPECTION DISTRICTS 1961

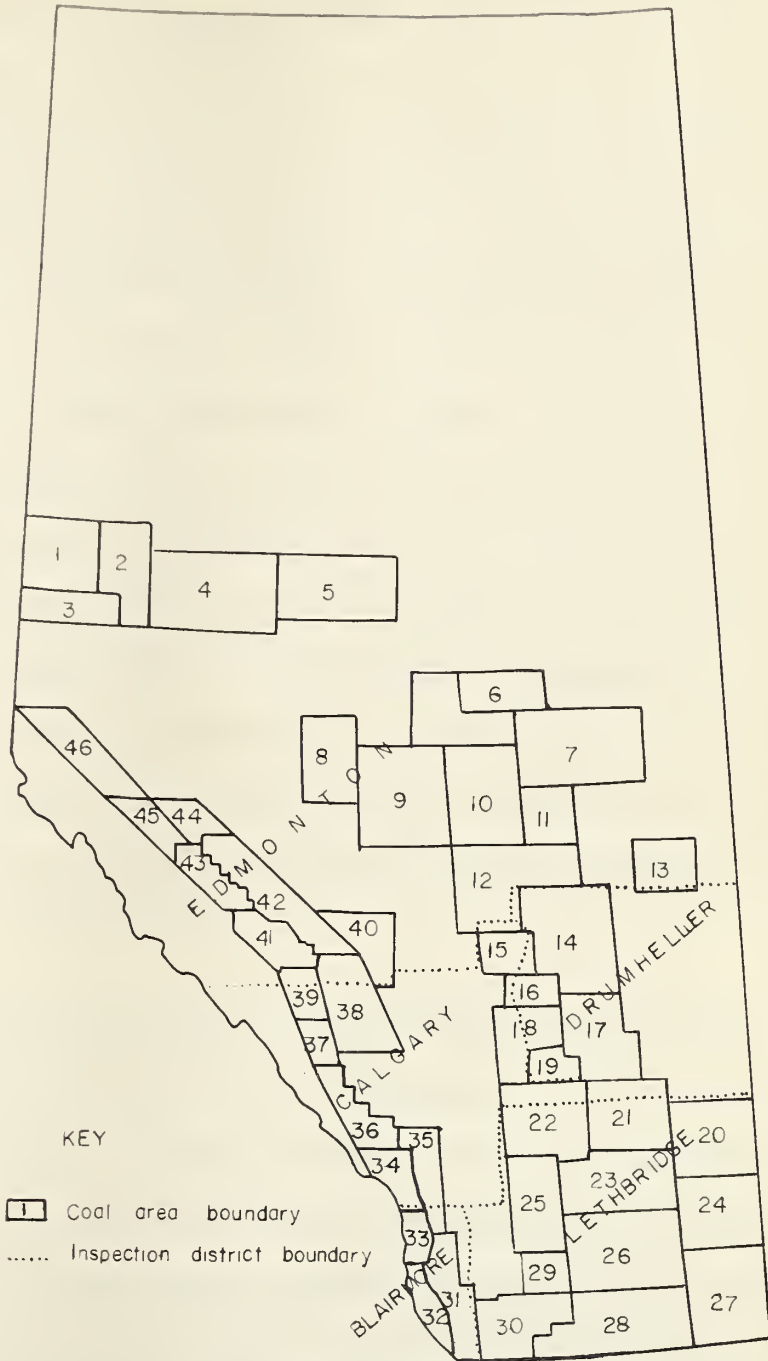


Fig. 38. Source: Annual Report of the Mines Division of the Dept. of Mines & Minerals, 1961. p. 9.

Under present conditions the very small pioneer farm on the fringes of existing agricultural areas is increasingly uncommon. There are examples of land which has been cleared laboriously only to lie unused as demand for its produce was insufficient. The fact that rural population has been declining does not mean that all of the area which could be farmed is in production, but rather that under present economic conditions the use of the entire potential is unrealistic.

In considering the whole question of changes in agriculture the question of diversification versus specialisation arises. The early emphasis on the growing of wheat in Alberta has been discussed. Later came the tendency towards mixed farming. The movement away from the cultivation of wheat reflected the search for stability in farming in the face of fluctuating yields and markets. Now with the increasing amount of capital required to make use of the recent technological developments which can increase production and efficiency and the realisation that instability is characteristic of farming current feeling seems to be that increasing specialisation is inevitable in order to take advantage of techniques of mass production and a narrow margin of profit.¹⁰

THE COAL MINING INDUSTRY AND ITS EFFECTS ON POPULATION

The coal-bearing areas in Alberta (Fig. 38) cover much of the Province. The main coal-bearing formations are the Lower-Cretaceous Blairmore formation in the Crowsnest area which yields bituminous coal, and the Upper-Cretaceous Belly River and Edmonton formations which

¹⁰ S. Sinclair, Agricultural Adjustment Problems, University of Alberta Extension Papers, Ag-4, Edmonton, 1959, pp. 14. Other papers in this series were also consulted.

underlie much of the southern part of the Province and yield sub-bituminous coal. Production of coal has fluctuated from 43,220 tons in 1886 to as much as 8,826,311 tons in 1946; 4,854,838 tons in 1956 and 2,027,826 tons in 1961.

Employment figures have undergone similar changes (Table VII).

TABLE VII - NUMBERS EMPLOYED IN THE COAL MINING INDUSTRY

Year	Number	Year	Number
1936	8,110	1947	8,772
1937	7,836	1948	8,865
1938	7,411	1949	8,682
1939	7,456	1950	7,999
1940	7,416	1951	7,339
1941	7,714	1952	6,936
1942	8,040	1953	5,760
1943	8,636	1954	4,719
1944	8,375	1955	3,801
1945	8,309	1956	3,443
1946	8,583		

Source: H.D. Trace, An examination of some factors associated with the decline of the coal industry in Alberta, unpublished M.A. thesis, University of Alberta, 1958.

In 1961 the employed total had dropped further to a 1,323 persons. Of this total 352 were employed above ground, 711 below ground and 260 in strip mining.¹¹ Changes in the pattern of population distribution resulting from the decline of the coal mining industry have affected a more limited area than changes in agriculture.

¹¹ H.D. Trace, An Examination of some factors associated with the decline of the coal industry in Alberta, unpublished M.A. thesis, University of Alberta, 1958, pp. 100. Alberta, Dept. of Mines and Minerals, Annual Report of the Mines Division of the Province of Alberta 1961, Queen's Printer, Edmonton, pp. 56.

Between 1945 and 1956, 234 mines closed and in 1961 this trend was continuing. Four more were closed in that year alone. This leaves sixty-four mines operating, two of which were opened in 1961. The areas where changes are taking place are, for example, in the Crowsnest area of the foothills, around Drumheller, and east of Jasper National Park (Fig. 27). Most of the population displaced was absorbed by other occupations inside the Province. However, those who had worked in the sub-bituminous mines were not so harshly affected as those in the mountains since many of them had been accustomed to having part-time jobs, in farming or industry, and these could be found in adjacent areas. In the sparsely settled foothills the transition was more difficult and complete abandonment of flourishing settlements resulted.

THE OIL AND GAS INDUSTRY AND ITS EFFECTS ON POPULATION

The numbers of people employed in manufacturing, trade and merchandising, and transport have grown more than those employed in mineral extraction. The effect on population growth of the development of oil and gas resources in the Province has been indirect rather than direct. The value of investment in the industry and the economic prosperity which it has generated lead to popular overestimation of its effects on population growth.

Although much of the increase in the numbers of persons employed between 1941 and 1951 was in mining, quarrying and oil drilling this represented only a small part of the labour force. In 1951 the production of crude oil and natural gas employed 5,800 persons and a

further 2,900 in oil prospecting giving a total of 8,700.¹² This may be compared with the period from 1911 to 1931 when the number of people in agricultural pursuits rose from 80,000 to 114,000. The earlier wheat boom was more significant than the 'oil boom' in terms of the work force directly involved but only a trend is suggested since the two periods or the bases of the estimates are not strictly comparable.

Another problem is raised by the varying definitions used in estimating the work force in the petroleum industry. Hanson gives the figure of 11,000 in 1946 for those occupied in administration, exploration, drilling, well operation, pipeline operation, miscellaneous contracting services, refining, gas manufacture and distribution, petrochemical manufacture and the marketing of petroleum products.¹³ More than three per cent of the work force was involved in 1946, but the broader definition of the occupations allied to petroleum production account for some of the difference between this and the smaller figure quoted in 1951. Continuing to use Hanson's definition the number had risen to 33,000 or about eight per cent of the work force in 1956. Comparable figures for 1961 are not available, but an increase can be assumed reasonably since the numbers engaged in the production of crude oil and natural gas had risen to almost 15,000 by January 1962.¹⁴ Petroleum processing in the Province is characterised by few employees

¹² R.E. Caves and R.H. Holton, The Canadian Economy, Cambridge, 1959, p. 202.

¹³ E.J. Hanson, Dynamic Decade, Toronto, 1958, pp. 286-287.

¹⁴ Canada, Bureau of Statistics, Employment and Payrolls, January 1962, Ottawa, 1962, p. 12.

producing a large and valuable output.

Employment statistics are not available on the basis of census subdivisions but it is reasonable to assume that the petroleum industry has been significant not only in the areas where it is found but throughout the Province in increasing personal incomes, industrial growth, helping to arrest population movement out of the Province, and in giving the economy a wider base. Detrimental effects of the increased use of oil and natural gas in Alberta have been felt in the sharp decline in the demand for coal and the closing of small coal mining settlements. The importance of public feeling in attracting population to an area which has the reputation of progress and rapid development cannot be measured accurately but should not be forgotten when the movement of people is discussed.

A comparison of the importance of employment in different industries in Alberta in 1946 and 1956 indicates the large increase in those involved in the service industries, retail and wholesale trade and manufacturing (Table VIII). The decrease in the percentage of the work force in agriculture is in keeping with the trends which have been revealed by the study of census data. More people have been required by industries and consequently the number in the services shows a large increase. A detailed discussion of the industrial structure of the Province is outside the scope of the thesis, but the resulting associated growth of urban population is fundamental to this study.

TABLE VIII - ESTIMATED CHANGES IN THE RELATIVE IMPORTANCE OF
EMPLOYMENT IN DIFFERENT INDUSTRIES IN ALBERTA 1946 AND 1956
Employment in each industry as a per cent of total labour force

	1946	1956
Agriculture	40.2	26.0
Forestry and logging	0.6	0.5
Fishing and trapping	0.5	0.3
Mining	3.4	4.0
Manufacturing	9.2	11.0
Electricity, gas and water	0.6	1.0
Construction	4.3	7.8
Transportation, communications and storage	7.1	7.0
Retail and wholesale trade	9.9	13.7
Finance	1.7	2.6
Services	21.3	25.5
Not stated	1.3	0.5
Total percentage	100.0	100.0
Estimated labour force	302,000	416,000

Source: E.J. Hanson, Dynamic Decade, Toronto, 1958.

TRANSPORT FACILITIES

Agriculture, the mineral industry and manufacturing all depend on adequate transport for their success, and the Province is concerned with the continuing development of facilities.

Some aspects of transport and communications have been discussed already. The extension of railway mileage is significant. Freight rates are closely related to the development of industry, and high rates have some bearing on the fact that much of Alberta's industry caters for local markets. High railway rates also limited oil and gas production until pipelines were constructed. These

allowed the industry to cater for exceptionally large markets - from Montreal to the Pacific northwest. The increased demand encouraged more processing industry and exploration, and each of these required a share of the work force which could expand.

Formerly railways were all important, but truck transport has been developed increasingly to reach northern areas not linked by rail to the main centres of population. Of a total road mileage of more than 85,000 miles about 6,000 miles are paved. Besides the roads provided by the Province there are minor networks of oilfield and forestry roads.

Air transport has been active in Provincial development by giving rapid links with eastern centres and in opening up the northern areas. Water transport has lost its old importance and is now of significance only in the northern part of the country, mainly outside the Province, although Waterways, just south of McMurray, is the loading point for freight for Fort Smith and other points farther north.

By all these means accessibility to more of the Province has been improved, and population is invariably found where means of livelihood and contact with other areas is most readily available.

Urbanisation

This chapter would be incomplete without reference to the great importance of urbanisation in population change in the Province. For almost a decade more than 50 per cent of the Provincial population has been classified as urban or living in incorporated settlements. The urban-rural ratio for each census subdivision at census years

EDMONTON AND CALGARY CITY POPULATION GROWTH 1931 - 1961

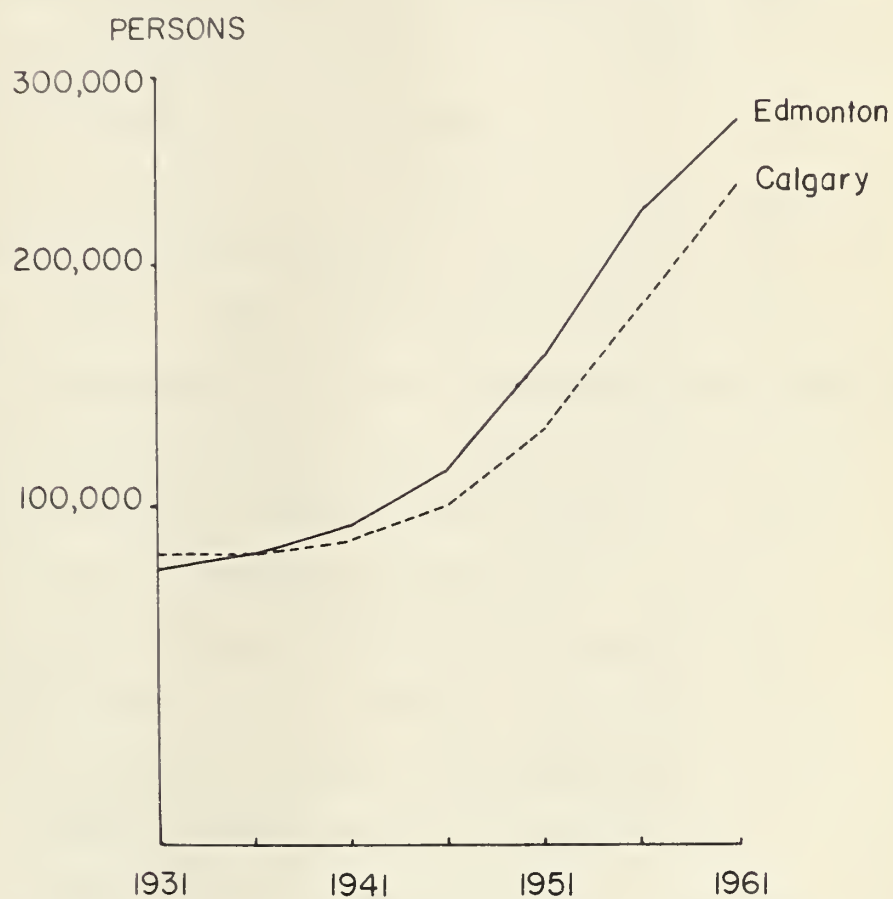


Fig. 39. Source: Census of Canada.

(Fig. 27) illustrates that the increasing relative importance of urban population is characteristic of almost the entire Province.

No classification of urban settlement is attempted in this study but analysis of census data suggests differing growth patterns for several types of settlement which have distinctive functions.

Edmonton and Calgary are outstanding in size and function (Fig. 39). They became fairly large centres at an early date and profited from the development of the resources of the Province. They provided growing markets, labour and amenities, developed transport facilities and ready sources of electric power.

Regional centres such as Lethbridge, Medicine Hat, Red Deer or Grande Prairie originated mainly as agricultural service and collecting centres. Later, location and transport facilities, besides individual factors peculiar to each, helped to give them predominance over nearby towns. Their functions expanded to include primary industry, local administrative and other services for extensive areas.

The small incorporated village or town is common in the Province especially where farming is developed. These agricultural centres were located almost invariably on a railway. Many such settlements, especially in the drier south and eastern parts of the Province, have declined in importance and size with the growth of fewer but larger centres in which services have tended to become increasingly centralised, and with land use changes. The pattern of growth in census subdivisions Numbers 34, 47, 52 and 53; Special Areas 2 and 3 illustrates the point (Fig. 20). Development of a road network passable in all weather has had its effect on the mobility of the rural population. People travel easily by car or truck distances to market and retail centres

which would not have been considered twenty years ago.

Exceptions to settlements which owed at least their initial growth to agriculture are relatively few. They include those which grew up in areas where coal was mined and later on oilfields. The decline of small settlements in the Drumheller and Luscar areas has been illustrated. The fluctuations found in towns like Devon which is in a sense detached from the surrounding countryside show how settlements respond to the exploration, development and later stable production phases of an oilfield.

In most of the census subdivisions which have had declining total populations during the last thirty years urban population has been growing, and rural numbers have been decreasing. Part of the change is related to changes in farm size and the greater relative importance of employment in other occupations, and the growing demands of industrialisation even on a small local scale. In all cases the urban increases are of fairly recent occurrence and represent a trend which appears to be continuing in the Province as a whole as in most census subdivisions.

CHAPTER VI

SUMMARY AND CONCLUSION

In the first background chapters of this study it was shown how dependent the settlement of Alberta has been upon the development of transport routes, particularly the railways, and upon agriculture.

While natural increase has been of continuing importance in population increase it was immigration which was largely responsible for the greatest changes in Provincial population. The greatest numbers of immigrants arrived in the Province before 1931 by which year much of the southern part of the Province was settled, and as later experience proved, settled too densely for the best use of the land.

These facts affected the population history of census subdivisions throughout the Province even while the pattern for Alberta as a whole showed continuous growth with a high rate of natural increase and a varying contribution from immigration. The background provided essential knowledge to aid the understanding of more recent population changes and suggested causal factors which might turn out to be important.

The focus of attention in the study was primarily on areal distribution of population changes. The lack of a common areal basis for collection of data by the Dominion Bureau of Statistics throughout the thirty-year period was a hindrance. However, by using the township as a unit a comparative table could be drawn up (Appendix I) in which population for each census year since 1931 was given in terms of the 1956 Census subdivision boundaries.

One aspect of the approach to the study was to see if there was any way in which the population histories of a large number of census subdivisions could be organised in regional groupings, stressing areas of similarity and also stressing the continuity of change throughout the thirty-year period. Three main methods were used in the analysis of the data.

Initially, calculation of percentage changes in population of census subdivisions was carried out, but in subsequent discussion the continuity found in any census subdivision tended to be lost. Due to inherent characteristics of the method the map series produced posed some difficulty in interpretation.¹ Percentage change was an unwieldy basis of regional grouping although it remains of great importance in discussion of population change.

The index of variability of population² proved somewhat disappointing and it was felt that it did not provide a satisfactory basis for grouping of patterns of population change. However, it is useful as supporting evidence when used with other methods of analysis and illustrates common problems besetting the student of population change.

¹ It has been pointed out earlier in the text that a map in the series can be compared directly only with the one directly preceding or succeeding it. Thus percentage changes through the thirty years are not immediately apparent with reference to a common base year.

² Variability of population numbers is an outstanding characteristic of population change in Alberta, and it seemed that the index of variability suggested by Geddes might be of use and possibly provide a basis for regional grouping of population patterns of change. Geddes had used the index in reference to Canadian Provinces and individual states in the United States of America and had suggested that it held potential for application to smaller areal units.

The method involved calculating the variation at every census year from the theoretical line of growth or decline given by joining on a graph the populations of the first and last census years in the period under discussion. The average deviation was then taken and

The third method of analysis used, although patently simple, proved to be the most satisfactory in the light of the stated aims of the thesis.³ Patterns of rates of population change provided a reasonable basis for the grouping of census subdivisions, and the sixteen patterns which resulted are illustrated in Chapter III. Although the census subdivisions belonging to any group have widely differing total numbers, and the rates might differ slightly, the overall experience of change was very similar throughout, and the continuity of change was clearly shown.

The problems involved in grouping population changes must be stated but grouping per se was not the central theme of the study but rather an essential preliminary.

Nor was the study concerned with change per se but with the areal patterns of change. Cartographic illustration is essential in

expressed as a percentage of the mean change from first to last census year in the period.

One serious drawback of this method, if more than a theoretical study of population is intended, is that the index of variability derived as stated gives no indication as to whether the changes have been predominantly negative or positive - facts which are of the greatest importance in discussing the population histories and causes of change in census subdivisions. Like other mathematical methods of analysis the index of variability reflects the actual size of the totals from which it is derived. Thus it was found that areas with similar rates of growth judging from the graphs of growth might have very widely differing indices of variability if the population in one case was some hundreds and in the other some thousands.

³ The population of each census subdivision at each of the seven census years was plotted graphically using a semi-logarithmic scale. This enabled estimates of absolute population numbers to be read off for any year and also gives a true impression of the rate of population change, which is proportional to the slope of the line drawn. While there is inevitably generalisation between census years the continuity of change is apparent and when the graphs were drawn on the map showing census subdivisions coherence began to emerge with similarity of patterns throughout the Province.

the discussion of these areal patterns. The maps showing patterns of population change and urban-rural change show the data for over one hundred census subdivisions in a way the text alone cannot achieve. The 'regions of population change' were neither clear-cut nor easy to handle but their delimitation was the main means of geographic generalisation and provided some measure of escape from the limits imposed by census subdivision boundaries.

No one factor was solely responsible for population changes in Alberta, but some factors were clearly influential in leading to areal differences in population throughout the thirty years. Changes in land use, climatic variability, increasing industrialisation and increased population mobility were a few of these, and include many local variations, none of them delimited by census subdivision boundaries.

The settlement of Alberta was largely agricultural and fluctuations in the economic prosperity and variations in the physical feasibility of agriculture have affected population change in a large part of the Province, and consequently the population geography. Later, mineral development became important to Alberta in terms of finance, and the development of industry and to a more limited extent in direct employment of labour.

A major feature in increasing population mobility and to some extent its relocation has been improved transport or the increase in the mileage of paved roads. Railways remain important in Alberta, although there are areas where branch line closure is faced, but the increase in the road mileage in recent years is most impressive. This has no doubt contributed to the urban growth in the Province as well as to the spacing of the most rapidly growing settlements.

Most census subdivisions had fluctuating populations mainly related to economic changes, as well as changing adjustment to aspects of the physical environment. One fluctuation not discussed in detail was the population decrease in many census subdivisions between 1941 and 1946. War-time demands on man power were definitely expressed in population history.

Throughout the Province and in most census subdivisions there has been an increase in urban population and a relative decrease in rural population. This increase in urban population is of comparatively recent occurrence. Rural decline is largely associated with farm enlargement, decrease in the number of homesteaders taking up the minimum acreage, the changing demands for agricultural produce and more efficient farming techniques. Urban growth is closely related to the same factors. The fastest rates of growth have been found where the development of industry has occurred and where services extend over a fairly large area, but even small towns have experienced growth due to the concentration of services and improved communications.

To what extent are the patterns of population change from 1931 to 1961 in census subdivisions in Alberta different from one another and from the pattern of change in the Province as a whole? Lack of uniformity is the most striking characteristic of the population geography of the various parts of Alberta.

Few census subdivisions had steadily growing populations through the years 1931-1961, and those which had were found in widely separated locations in the Province. This lack of contiguous occurrence was characteristic of census subdivisions in most groups although less so in areas in the drier south and east, or coal mining areas, where pop-

ulation declined for several census periods.

No census subdivisions exhibited patterns of continuous decline 1931-1961. The nearest approach to the reverse of the Provincial trend was found where numbers declined from 1936 to 1961. These areas tend to be those in which initial settlement had been relatively dense, but in which rainfall totals were small and variable and wheat proved unsatisfactory as a crop when grown continuously.

In most census subdivisions population fluctuated widely and with great variety, so that population change differs greatly from one census subdivision to another and from most census subdivisions to the Province as a whole.

Accepting the statement that population is most important as one part of "the existing integrations of diverse phenomena which by their existence determine the variable character of area" it is to be hoped that this study through analysis of the areal variety of changing population has contributed to a better understanding of the geography of Alberta.

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APPENDIX I

See back folder

APPENDIX II

VARIABILITY IN POPULATION GROWTH IN ALBERTA

1931-1961 BY CENSUS SUBDIVISIONS

CENSUS SUBDIVISIONS	INDEX OF VARIABILITY
<u>Division No. 1</u>	
2. Forty Mile	11.23
11. I.D.	15.89
22. I.D.	15.03
Army Range	11.59
<u>Division No. 2</u>	
14. Taber	8.20
25. Lethbridge	5.72
Newell Co. No. 4	3.76
Warner Co. No. 5	2.85
<u>Division No. 3</u>	
6. Cardston	6.55
9. Pincher Creek	14.56
26. Willow Creek	7.75
<u>Division No. 4</u>	
34. Acadia	18.95
Special Area No. 2	15.68
Special Area No. 3	21.71
<u>Division No. 5</u>	
40. Wheatland	3.10
42. I.D.	14.06
47. Starland	15.25
48. Kneehill	4.09
Vulcan Co. No. 2	10.49
Indian Reserve	-
<u>Division No. 6</u>	
31. Foothills	5.85
44. Rockyview	20.33

46. I.D.	-
49. Mountain View	2.67

Division No. 7

52. Provost	7.33
53. Paintearth	7.30
61. Wainwright	9.15
62. Flagstaff	2.53
Stettler Co. No. 6	7.08
Buffalo National Park	1.79

Division No. 8

55. Red Deet	19.12
64. Lacombe	3.29
65. I.D.	5.44
68. I.D.	83.33
Ponoka Co. No. 3	3.81

Division No. 9

8. I.D.	56.60
10. I.D.	14.89
27. I.D.	12.41
33. I.D.	27.25
50. I.D.	61.20
58. I.D.	24.97
69. I.D.	32.99
946. I.D.	10.42
Banff National Park	18.78
Jasper National Park	37.01
Waterton Lakes National Park	17.15

Division No. 10

63. Camrose	1.60
71. Vermilion River	7.71
72. Minburn	3.16
73. Beaver	4.21
81. Eagle	7.53
82. Lamont	4.19
Elk Island National Park	20.00

Division No. 11

74. Wetaskiwin	4.72
75. Leduc	4.61
77. I.D.	24.82
83. Strathcona	18.06

84. Stony Plain	3.01
90. Sturgeon R.	19.05

Division No. 12

85. I.D.	40.03
86. St. Paul	4.77
87. Bonnyville	1.10
89. Smoky Lake	7.73
101. I.D.	18.89
102. I.D.	13.37
121. I.D.	16.86
143. I.D.	40.31
Wood Buffalo National Park	-

Division No. 13

92. Westlock	5.36
93. Lac St. Anne	7.36
103. Athabasca	9.80
106. Barrhead	8.86
107. I.D.	32.97
108. I.D.	60.27
122. I.D.	7.79
Thorhild Co. No. 7	12.40

Division No. 14

78. I.D.	12.27
79. I.D.	67.29
95. I.D.	16.03
97. I.D.	24.35
109. I.D.	13.92

Division No. 15

110. I.D.	44.65
111. I.D.	15.24
123. I.D.	77.30
124. I.D.	61.16
125. I.D.	7.01
126. I.D.	11.87
128. I.D.	17.25
129. I.D.	21.64
130. Smoky River	3.11
131. I.D.	10.08
132. I.D.	17.42
133. Spirit River	1.92
134. I.D.	9.30
135. Peace	24.00

136. Fairview	4.32
137. I.D.	20.08
138. I.D.	9.68
139. I.D.	9.58
144. I.D.	28.27
145. I.D.	44.55
146. I.D.	18.42
147. I.D.	15.34
148. I.D.	8.28
149. I.D.	83.00
Grande Prairie Co. No. 1	25.91

Source: Calculated after Geddes using data from Census of Canada.

APPENDIX III

INDIAN CENSUS, ALBERTA 1929-1959

	<u>1929</u>	<u>1934</u>	<u>1939</u>	<u>1944</u>	<u>1949</u>	<u>1954</u>	<u>1959</u>
Blackfoot Agency							
Blackfoot.....	724	765	830	961	1129	1356	1641
Blood Agency - Blood..	1204	1293	1476	1628	1899	2202	2850
Edmonton Agency -							
Alexander's.....	151	181	182	202	240	266	336
Enoch's (Stony Plain)	148	170	185	192	224	262	321
Joseph's (Alexis)...	170	167	181	186	212	270	346
Michel's.....	86	97	100	104	123	125	Enfranchised
Paul's.....	<u>159</u>	<u>190</u>	<u>221</u>	<u>221</u>	<u>244</u>	<u>292</u>	<u>361</u>
TOTAL....	714	805	869	905	1043	1215	1364
Fort Smith Agency -							
Chipewyans, Fort							
Chipewyan.....	307	343	347	259	161	167	191
Chipewyans, Fort							
Smith (N.W.T.).....	162	186	178	189	186	185	224
Cree, Ft. Chipecyan.	253	270	222	293	427	490	570
Cree Chipewyan, Fts.							
McKay & McMurray....	179	189	294	172	94	99	106
Maurice, Fond du Lac	388	404	446	509	540	305	350
Stragglers, Janvier	<u>44</u>	<u>33</u>	<u>54</u>	<u>87</u>			
TOTAL	1333	1425	1541	1509	1408	1246	1441
Hobbema Agency,							
Ermineskin's.....	254	301	331	332	375	424	601
Louis Bull's.....	129	147	148	143	174	200	282
Montana.....	58	74	81	84	91	114	150
Samson's.....	<u>494</u>	<u>543</u>	<u>633</u>	<u>674</u>	<u>798</u>	<u>936</u>	<u>1189</u>
TOTAL	935	1065	1193	1233	1438	1674	2222
Lesser Slave Lake -							
Boyer River.....	131	107	101	106	103	145	190
Peace River Crossing	45	41	40	40	...	...	...
Fort Vermilion.....	91	89	110	134	146	134	151
Grande Prairie &							
Dunvegan.....	112	106	117	...	...	...	...
Kinnosayo's.....	679	89	497	149	...	...	...
Little Red River....	192	198	206	245	293	459	534
Moberly Lake.....	81	...	...	...	...	...	...
Sturgeon Lake.....	311	323	376	296	326	374	450
Wabasca.....	643	601	791	640	806	777	899
Whitefish Lake.....	<u>197</u>	<u>243</u>	<u>300</u>	<u>156</u>	<u>174</u>	<u>199</u>	<u>295</u>
TOTAL	2482	1797	2538	1766	1848	2088	2519

INDIAN CENSUS, ALBERTA

	<u>1929</u>	<u>1934</u>	<u>1939</u>	<u>1944</u>	<u>1949</u>	<u>1954</u>	<u>1959</u>
<u>Union Lake Agency -</u>							
Chipewyan, Cold Lake...	289	326	370	371	428	496	607
Frog Lake.....	155	179	177	188	231	285	354
Keeheewin's.....	<u>134</u>	<u>163</u>	<u>173</u>	<u>182</u>	<u>220</u>	<u>269</u>	<u>322</u>
TOTAL.....	578	668	720	741	879	1050	1283
Peigan Agency - Peigan.	402	438	485	557	666	793	1000
<u>Saddle Lake Agency-</u>							
Beaver Lake.....	84	92	101	107	123	120	152
Chipewyan.....	50	51	46	45	93	82	69
James Seenum's.....	275	317	369	370	432	...	...
Saddle Lake.....	<u>470</u>	<u>506</u>	<u>592</u>	<u>536</u>	<u>630</u>	<u>1392</u>	<u>1644</u>
	879	976	1108	1058	1278	1594	1865
<u>Sarcee Agency-</u>							
Bull's Head Band....	146	156	166	180	201	240	290
Sunchild Cree.....	...	...	...	...	...	<u>139</u>	<u>167</u>
						379	457
<u>Stone Agency -</u>							
Bearspaw.....	230	256	253	274	310	346	432
Chiniquay.....	122	144	181	199	236	248	318
Wesley.....	259	284	281	296	294	310	374
John O'Chiese.....	...	...	...	...	...	117	213
Driftpile.....	...	203	266	270	277	287	339
Sawridge.....	...	75	71	67	56	36	34
Upper Hay River.....	...	507	462	500	523	567	694
Beaver Band(Horse Lake & Clear Hills).				99	86	82	76
Lubicon Lake.....	...	...	...	65	77	73	43
Sucker Creek.....	...	...	...	200	219	254	330
Blue Quill's.....	...	...	...	122	154	...	...
Heart Lake.....	...	...	...	...	42	33	52
Janvier.....	...	...	...	...	84	96	126
Bigstone.....	...	...	...	...	93	...	...
Duncan's.....	...	...	...	...	35	31	38
Swan River.....	<u>...</u>	<u>...</u>	<u>...</u>	<u>...</u>	<u>104</u>	<u>124</u>	<u>150</u>
TOTAL	611	1469	1514	2092	2590	2604	3219

Source: Department of Citizenship and
Immigration. Ottawa.

APPENDIX IV

ALBERTA-CENSUS SUBDIVISIONS

Division No. 1

- 2. Forty Mile
- 11. Improvement District
- 22. Improvement District
- Army Experimental Range

Division No. 2

- 12. Taber
- 25. Lethbridge
- Newell County No. 4
- Warner County No. 5

Division No. 3

- 6. Cardston
- 9. Pincher Creek
- 26. Willow Creek
- Indian Reserve

Division No. 4

- 34. Acadia
- Special Area No. 2
- Special Area No. 3

Division No. 5

- 40. Wheatland
- 42. Improvement District
- 47. Starland
- 48. Kneehill
- Vulcan County No. 2
- Indian Reserve

Division No. 6

- 31. Foothills
- 44. Rockyview
- 46. Improvement District
- 49. Mountainview

Division No. 7

- 52. Provost
- 53. Paintearth
- 61. Wainwright
- 62. Flagstaff
- Stettler County No. 6
- Buffalo National Park

Division No. 8

- 55. Red Deer
- 64. Lacombe
- 65. Improvement District
- 68. Improvement District
- Ponoka County No. 3

Division No. 9

- 8. Improvement District
- 10. Improvement District
- 27. Improvement District
- 33. Improvement District
- 50. Improvement District
- 58. Improvement District
- 69. Improvement District
- 946. Improvement District
- Banff National Park
- Jasper National Park
- Waterton Lakes National Park

Division No. 10

- 63. Camrose
- 71. Vermilion River
- 72. Minburn
- 73. Beaver
- 81. Eagle
- 82. Lamont
- Elk Island National Park

Division No. 11

- 74. Wetaskiwin
- 75. Leduc
- 77. Improvement District
- 83. Strathcona
- 84. Stony Plain
- 90. Sturgeon River

Division No. 12

- 85. Improvement District
- 86. St. Paul
- 87. Bonnyville
- 89. Smoky Lake
- 101. Improvement District
- 102. Improvement District
- 121. Improvement District
- 143. Improvement District
- Wood Buffalo National Park

Division No. 13

- 92. Westlock
- 93. Lac St. Anne
- 103. Athabasca
- 106. Barrhead
- 107. Improvement District
- 108. Improvement District
- 122. Improvement District
- Thorhild County No. 7

Division No. 14

- 78. Improvement District
- 79. Improvement District
- 95. Improvement District
- 96. Improvement District
- 109. Improvement District

Division No. 15

- 110. Improvement District
- 111. Improvement District
- 123. Improvement District
- 124. Improvement District
- 125. Improvement District
- 126. Improvement District
- 128. Improvement District
- 129. Improvement District
- 130. Smoky River
- 131. Improvement District
- 132. Improvement District
- 133. Spirit River
- 134. Improvement District
- 135. Peace
- 136. Fairview
- 137. Improvement District

- 138. Improvement District
- 139. Improvement District
- 144. Improvement District
- 145. Improvement District
- 146. Improvement District
- 147. Improvement District
- 148. Improvement District
- 149. Improvement District
- Grande Prairie County No. 1

Source: Census of Canada

APPENDIX V

CENSUS SUBDIVISIONS CONTAINED IN GROUPS 1-17

Group 1.

106. Barrhead
111. Improvement District
139. Improvement District
93. Lac St. Anne
68. Improvement District

Group 2.

147. Improvement District
Grande Prairie County No. 1
109. Improvement District
Ponoka County No. 3
25. Lethbridge
87. Bonnyville
55. Red Deer
49. Mountainview
90. Sturgeon River
131. Improvement District

Group 3.

Thorhild County No. 7
92. Westlock
103. Athabasca
101. Improvement District
102. Improvement District
75. Leduc

Group 4.

138. Improvement District
134. Improvement District
74. Wetaskiwin

Group 5.

65. Improvement District
144. Improvement District
64. Lacombe
42. Improvement District

Group 6.

- 86. St. Paul
- 72. Minburn
- 62. Flagstaff
- 73. Beaver
- 145. Improvement District
- 10. Improvement District

Group 7.

- Warner County No. 5
- 136. Fairview
- 48. Kneehill
- 40. Wheatland
- 133. Spirit River
- Stettler County No. 6
- 71. Vermilion River
- 61. Wainwright
- 9. Pincher Creek
- 83. Strathcona
- 2. Forty Mile
- 135. Peace
- 125. Improvement District

Group 8.

- 95. Improvement District
- Army Experimental Range
- 128. Improvement District

Group 9.

- 44. Rockyview
- Elk Island National Park
- 14. Taber
- 84. Stony Plain
- 122. Improvement District
- 126. Improvement District
- 124. Improvement District

Group 10.

- 81. Eagle
- 82. Lamont
- 89. Smoky Lake

Group 11.

33. Improvement District
 8. Improvement District
 130. Smoky River
 132. Improvement District

Group 12.

108. Improvement District
 85. Improvement District
 50. Improvement District.

Group 13.

52. Provost
 53. Paintearth
 34. Acadia
 Special Area No. 2
 Special Area No. 3
 47. Starland
 Vulcan County No. 2

Group 14.

22. Improvement District
 Banff National Park
 Jasper National Park
 96. Improvement District
 11. Improvement District

Group 15.

Newell County No. 4
 146. Improvement District
 107. Improvement District
 6. Cardston

Group 16.

77. Improvement District
 78. Improvement District
 149. Improvement District
 143. Improvement District
 110. Improvement District.

58. Improvement District
 31. Foothills
 148. Improvement District
 27. Improvement District
 26. Willow Creek
 129. Improvement District
 79. Improvement District
 946. Improvement District
 121. Improvement District

Group 17.

Waterton Lakes National Park
 137. Improvement District
 69. Improvement District
 123. Improvement District
 143. Improvement District
 110. Improvement District

APPENDIX VI
NOTES ON FIGURES

Data from the Census of Canada of every year from 1901 to the present day was drawn upon extensively. On maps which involved a large number of tables and volumes the source is given as Census of Canada. From this it should be understood that the Volumes of the Census on Population at several Census Years were consulted.

The figures which deal in detail with patterns and changes in census subdivisions, e.g. Figs. 20, 21, 23, 24, 25, 30, 32, 34 and 35 again used data from the Census of Canada. However, since comparable data referring to 1956 census subdivisions is not available for the years 1931, 1936, 1941 and 1946 tables had to be compiled before the maps could be drawn. For these the earlier data for townships was organised to give population in the recent census subdivisions. Appendix I shows the comparable table of population numbers and percentage changes in census subdivisions from 1931 to 1961.

APPENDIX VII

The geographic study of the population of Alberta can be approached from numerous aspects. Some of the problems encountered in the presentation of this thesis have been stressed already, and now some lines of possible research may be noted.

The preliminary and general nature of the thesis indicates clearly the problems involved in choosing a scale of treatment which is realistic in terms of the time available. For example, the basic statistical calculations are laborious and very time consuming.

In order to reduce excessive generalisation to a minimum when the topic ranges over a wide area with its differing local characteristics more detailed analysis of smaller sample areas would be useful. Obviously, even by this method general statements will have to be made, but on a sounder basis. The study of population need not be confined to the library alone, and fieldwork can play an important part.

A grouping of patterns of population change in census subdivisions in the Province was undertaken on the basis of trends. Some modification might be made for the actual size of the total population, for example a lower total population in 1961 than in 1931 may be significant.

Some interesting local variations might appear if the rates of change of rural and urban population were studied separately. It seems certain that the decrease in rural and increase in urban population might be emphasised more strongly. Only in certain individual

FROM THE FIRST SETTLEMENTS TO THE PRESENT TIME
BY
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OF THE UNIVERSITY OF CHICAGO

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census subdivisions does it seem likely that the patterns would be very different from those found when total population is considered.

The relative sizes and areal spacing of urban settlements at different times is striking. Urban settlement would seem to be a rewarding subject for study, and especially with reference to the idea of the central place hierarchy.

No maps of distribution or density of population have been included since it was felt that not enough time could be spent on them to make the results reliable and worthwhile. No facile solution to the problems of representation of population density or spacing of dots and the numbers to which the latter might refer is proposed but with intensive use of up to date air photographs a reasonable distribution may be suggested.

No complete explanation of population changes can be given in a relatively brief study, and selection of causal factors which seem most important may be difficult. In connection with this problem the viewpoints of other disciplines may be helpful. The importance of improved transport facilities in the increased mobility of population was mentioned briefly and it could provide a focus for more intensive study. Similarly the effects of the location of centralised schools might be analysed.

APPENDIX I
ALBERTA PERCENTAGE CHANGE AND RURAL - URBAN

POPULATION
DISTRIBUTION BY CENSUS SUBDIVISIONS 1931 - 1961

CENSUS SUB- DIVISION	1931				1936				1941				1946				1951				1956				1961			
	Total	Rural	Urban	Per cent change 1931-1936	Total	Rural	Urban	Per cent change 1936-1941	Total	Rural	Urban	Per cent change 1941-1946	Total	Rural	Urban	Per cent change 1946-1951	Total	Rural	Urban	Per cent change 1951-1956	Total	Rural	Urban	Per cent change 1956-1961	Total	Rural	Urban	
Division No. 1																												
2. Forty Mile	5,731	5,296	435	13.0	6,494	6,096	398	12.0	5,685	5,271	414	9.0	5,170	4,628	542	2.0	5,070	3,924	1,146	16.0	5,906	4,224	1,682	15.0	6,779	4,922	1,857	
11. I.D.	17,102	6,568	10,534	3.0	16,582	6,712	9,870	3.0	16,892	6,081	10,811	6.5	17,938	4,818	13,120	15.0	20,613	4,025	16,588	22.0	25,134	4,076	21,058	11.0	28,008	4,207	23,801	
22. I.D.	1,871	679	1,192	12.0	1,650	660	990	1.0	1,660	549	1,111	10.0	1,826	537	1,289	15.0	2,101	563	1,538	23.0	2,593	592	2,001	6.2	2,755	549	2,206	
Army Range	320	320	-	13.0	362	362	-	20.0	289	289	-	46.0	421	421	-	27.0	533	533	-	62.0	863	863	-	9.0	783	783	-	
Division No. 2																												
14. Taber	6,644	5,365	1,279	4.0	6,902	5,561	1,341	4.0	7,149	5,818	1,331	8.0	7,655	5,895	1,760	14.0	9,759	6,157	3,602	17.0	11,413	6,730	4,683	8.4	12,375	7,330	5,045	
25. Lethbridge	27,907	13,740	14,167	4.0	29,133	14,974	14,159	19.0	34,610	19,364	15,246	2.0	33,957	15,937	18,020	15.0	39,099	13,857	25,242	15.0	44,909	11,624	33,285	12.0	50,179	10,935	39,244	
Newell Co. No.4	5,914	4,477	1,437	6.0	6,277	4,856	1,421	29.0	7,692	5,880	1,812	3.0	7,927	5,847	2,080	24.8	9,812	7,023	2,789	2.3	9,591	5,943	3,648	7.9	10,353	6,022	4,331	
Warner Co. No.5	7,620	4,703	2,917	9.6	8,354	5,213	3,141	.8	8,285	5,128	3,157	1.9	8,440	5,171	3,269	6.9	9,024	5,322	3,702	.6	9,078	5,157	3,921	4.4	9,482	4,988	4,494	
Division No. 3																												
6. Cardston	9,475	6,579	2,896	.97	9,567	6,639	2,928	1.7	9,728	6,657	3,071	3.5	10,072	6,443	3,629	.28	10,100	6,293	3,807	7.0	9,387	5,398	3,989	1.1	9,495	4,856	4,639	
9. Pincher Creek	4,425	3,250	1,175	.09	4,429	3,289	1,140	8.1	4,070	2,951	1,119	5.7	3,837	2,595	1,242	22.5	4,790	3,215	1,575	2.9	4,930	3,109	1,821	26.95	6,259	3,222	3,037	
26. Willow Creek	10,926	6,952	3,974	7.8	10,069	6,388	3,681	2.7	10,337	5,931	4,406	6.5	9,660	5,295	4,365	5.8	10,222	5,166	5,056	23.1	12,585	6,344	6,241	13.1	10,939	4,847	6,092	
Division No. 4																												
34. Acadia	1,056	1,056	-	19.7	848	848	-	12.6	742	742	-	10.4	665	665	-	6.0	705	705	-	29.6	914	914	-	3.9	950	950	-	
Special Area No.2	9,803	7,999	1,804	19.6	7,878	6,170	1,708	9.4	7,134	5,171	1,963	11.1	6,339	4,166	2,173	4.9	6,028	3,590	2,438	7.7	6,494	3,687	2,807	4.98	6,818	3,774	2,944	
Special Area No.3	13,156	11,543	1,613	28.8	9,361	8,179	1,182	20.4	7,447	6,194	1,253	2.1	7,294	5,963	1,331	11.6	6,449	4,811	1,638	6.8	6,886	5,036	1,850	3.7	7,138	4,966	2,172	
Division No. 5																												
40. Wheatland	8,583	7,000	1,583	.5	8,627	7,080	1,547	7.2	8,006	6,460	1,546	5.5	7,567	5,866	1,701	.4	7,598	5,779	1,819	.7	7,543	5,582	1,961	.7	7,596	5,566	2,030	
42. I.D.	6,518	5,531	2,987	11.2	9,476	6,564	2,912	2.5	9,237	6,489	2,748	.2	9,260	6,601	2,659	2.9	9,526	6,925	2,601	14.6	8,134	5,502	2,632	12.1	7,116	4,295	2,821	
47. Starland	8,045	7,127	918	-	8,045	7,179	866	2.1	7,877	6,931	946	10.7	7,038	6,399	639	47.2	3,719	2,891	828	.4	3,704	2,831	873	2.1	3,781	2,899	882	
48. Kneehill	9,879	8,203	1,676	10.4	10,908	9,120	1,788	6.8	10,166	8,286	1,880	6.8	9,477	7,359	2,118	.02	9,479	7,174	2,305	.03	9,476	7,055	2,421	3.6	9,816	6,966	2,850	
Vulcan Co. No. 2	10,186	8,039	2,147	7.6	9,410	7,366	2,050	15.98	7,906	6,000	1,906	14.5	6,752	4,876	1,876	10.1	7,433	5,094	2,339	4.3	7,756	5,087	2,669	1.5	7,874	4,981	2,793	
Division No. 6																												
31. Foothills	11,641	7,705	3,936	8.8	10,613	7,161	3,452	31.5	13,960	10,017	3,943	2.97	13,545	8,278	5,267	4.1	12,991	8,100	4,891	1.4	12,807	7,902	4,905	2.2	13,088	7,849	5,239	
44. Rockyview	12,695	11,492	1,203	3.7	13,166	11,090	2,076	6.9	14,075	11,866	2,209	11.5	15,692	13,588	2,104	30.7	20,516	14,770	5,746	17.6	24,127	12,788	11,339	63.6	39,470	10,606	28,764	
46. I.D.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1,390	1,390	-	234.5	4,650	4,650	-	-	-	-	-	
49. Mountainview	11,048	8,804	2,244	12.3	12,410	10,011	2,399	2.1	12,672	10,072	2,600	4.3	12,130	9,244	2,886	7.98	13,099	9,497	3,602	12.1	14,559	9,273	5,286	.3	14,598	9,289	5,309	
Calgary	-	-	83,761	.4	-	-	83,407	6.59	-	-	88,904	12.5	-	-	100,044	29.0	-	-	129,060	40.8	-	181,780	33.5	-	-	-	-	
Division No. 7																												
52. Provost	7,316	6,452	864	3.3	7,075	6,244	831	16.3	5,921	5,100	821	9.3	5,368	4,434	934	11.2	4,768	3,751	1,017	5.2	5,015	3,621	1,394	2.7	4,879	3,309	1,570	
53. Paintearth	7,003	5,471	1,532	6.3	6,564	5,228	1,336	8.1	6,030	4,706	1,324	11.2	5,354	3,953	1,401	3.9	5,146	3,462	1,684	5.8	5,466	3,515	1,951	1.5	5,386	3,274	2,112	
61. Wainwright	8,290	6,489	1,801	6.7	8,843	7,012	1,831	11.98	7,783	5,929	1,859	7.7	7,186	4,924	2,262	7.2	7,704	4,690	3,014	6.4	8,200	4,481	3,719	12.2	9,201	4,814	4,387	
62. Flagstaff	11,737	9,140	2,597	2.2	11,995	9,355	2,640	5.5	11,332	8,733	2,599	9.7	10,231	7,370	2,861	3.0	10,539	7,194	3,345	1.1	10,652	6,806	3,846	2.2	10,419	6,427	3,992	
Stettler Co. No.6	9,500	7,406	2,094	-	9,500	7,520	1,980	7.1	8,821	6,777	2,044	11.3	7,820	5,660	2,160	19.6	9,352	6,059	3,293	9.9	10,277	6,061	4,216	2.13	10,496	6,008	4,488	
Buffalo Nat. Pk.	43	43	-	6.97	46	46	-	-	46	46	-	10.9	41	41	-	6504.9	2,708	2,708	-	77.7	604	604	-	-	-	-	-	
Division No. 8																												
55. Red Deer	15,472	10,984	4,488	16.2	17,983	13,074	4,909	7.9	19,408	13,546	5,862	3.84	18,958	11,686	7,272	22.7	23,277	12,243	11,034	25.8	29,280	12,830	16,450	28.1	37,494	13,403	24,091	
64. Lacombe	11,084	8,349	2,735	13.3	12,563	9,475	3,088	7.4	11,636	9,331	2,305	7.3	12,480	8,740	3,740	6.0	13,230	8,612	4,618	4.5	13,819	8,351	5,468	6.6	14,729	8,681	6,048	
65. I.D.	5,067	4,521	546	29.5	6,560	5,908	652	10.4	5,878	5,078	800	11.96	6,581	5,564	1,017	9.6	7,213	6,066	1,147	6.0	6,780	5,199	1,581	18.6	8,038	5,469	2,569	
68. I.D.	26	26	-	234.6	87	87	-	73.6	151	151	-	1.3	149	149	-	30.2	194	194	-	58.2	81	81	-	54.1	124	124	-	
Ponoka Co.No.3	9,102	7,862	1,240	20.14	10,936	9,578	1,358	5.7	11,563	9,847	1,716	4.5	11,047	8,945	2,102	12.9	12,470	9,139	3,331	4.1	12,978	8,611	4,367	6.98	13,884	8,728	5,156	
Division No. 9																												
8. I.D.	26	26	-	7.7	28	28	-	17.9	33	33	-	115.2	71	71	-	135.2	167	167	-	34.1	110	110	-	27.3	80	80	-	
10. I.D.	7,755	4,154	3,601	7.7	8,351	4,282	4,069	5.5	7,889	4,084	3,805	.3	7,865	4,095	3,770</													

40. I.D.	1,172	1,172	-	29.4	2,243	2,243	-	13.5	2,545	2,545	-	11.8	2,244	2,244	-	27.3	2,856	2,856	-	7.5	2,458	2,458	-	23.5	3,034	3,034	-
Banff N.P.	3,175	3,175	-	14.3	1,497	1,497	-	8.4	1,622	1,622	-	2.1	1,588	1,588	-	19.6	1,899	1,899	-	22.3	3,069	3,069	-	-	-	-	-
Jasper N.P.	1,747	1,747	-	22.5	276	276	-	2.5	269	269	-	21.9	210	210	-	13.3	238	238	-	16.4	277	277	-	-	-	-	-
Waterton Lakes N.P.	356	356	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	

Division No. 10

63. Camrose	14,116	10,684	3,432	5.3	14,859	11,342	3,517	2.3	15,238	11,245	3,993	2.96	14,786	10,312	4,474	10.5	16,334	10,457	5,877	5.3	17,200	9,626	7,574	1.8	17,513	8,932	8,581
71. Vermilion R.	13,946	11,857	2,089	8.1	15,069	13,026	2,043	5.96	14,171	11,957	2,214	21.6	11,109	10,541	2,568	22.3	13,586	9,663	3,923	9.5	14,879	9,557	5,322	2.6	15,266	9,104	6,162
72. Minburn	11,069	7,978	3,091	6.7	11,816	8,543	3,273	3.4	11,410	7,991	3,419	7.2	10,593	7,059	3,534	10.8	11,738	7,312	4,426	.1	11,750	6,742	5,008	1.5	11,571	6,179	5,392
73. Beaver	9,264	8,306	958	5.9	9,807	8,786	1,021	2.9	9,525	8,350	1,175	11.3	8,452	7,206	1,246	4.1	8,795	7,202	1,593	.3	8,819	6,883	1,936	4.1	8,457	6,447	2,010
81. Eagle	12,837	12,331	506	5.6	13,560	12,821	739	3.5	13,081	12,280	801	14.96	11,124	9,957	1,167	17.98	9,124	7,722	1,402	4.3	8,730	7,114	1,616	10.3	7,829	6,164	1,665
82. Lamont	13,867	11,849	2,018	1.6	14,091	12,205	1,886	1.1	13,936	11,939	1,997	13.6	12,039	10,049	1,990	6.9	11,203	8,778	2,425	10.1	10,066	7,700	2,366	9.6	9,099	6,749	2,350
Elk Is. N.P.	16	16	-	50.0	24	24	-	108.3	50	50	-	2.0	51	51	-	7.8	55	55	-	1.8	56	56	-	-	-	-	-

Division No. 11

74. Wetaskiwin	10,031	7,606	2,425	16.7	11,703	9,288	2,415	10.0	12,875	10,232	2,643	6.5	12,036	9,043	2,993	9.2	13,146	8,822	4,324	10.3	14,506	9,466	5,040	.3	14,465	8,669	5,796
75. Leduc	12,912	12,012	900	14.5	14,785	13,859	926	5.2	15,556	14,685	871	8.6	14,214	13,294	920	16.4	16,539	12,526	4,013	1.3	16,332	11,497	4,835	3.6	15,742	10,582	5,718
77. I.D.	977	977	-	49.6	1,462	1,463	-	17.9	1,724	1,724	-	16.2	1,445	1,445	-	9.3	1,310	1,310	-	345.9	5,841	3,259	2,582	13.7	6,642	2,371	4,271
83. Strathcona	7,716	6,715	1,001	7.5	8,291	7,392	899	2.6	8,072	7,169	903	3.3	7,805	6,884	921	11.23	8,682	7,591	1,091	31.2	11,496	8,873	2,623	29.9	14,938	11,988	2,950
84. Stony Plain	9,817	9,014	803	14.1	11,206	10,498	708	8.7	12,182	11,314	868	15.1	14,018	13,221	797	36.1	19,082	8,962	10,120	38.1	26,350	8,491	17,859	55.2	41,895	9,203	32,692
90. Sturgeon R.	11,595	8,739	2,856	7.5	11,834	9,077	2,757	8.3	12,333	9,213	3,120	3.1	11,948	8,793	3,155	39.9	15,877	11,174	4,703	40.8	21,201	13,865	7,336	52.4	32,304	17,712	14,592
Edmonton	-	-	79,197	7.7	-	-	85,774	9.4	-	-	93,817	20.6	-	-	113,116	41.1	-	-	159,631	41.6	-	226,002	21.5	-	-	-	274,529

Division No. 12

85. I.D.	116	116	-	222.4	374	374	-	17.4	439	439	-	34.6	287	287	-	27.5	208	208	-	67.3	348	348	-	4.3	333	333	-
86. St. Paul	10,092	9,154	938	14.6	11,567	10,617	950	8.9	10,534	10,516	1,018	7.2	9,778	9,591	1,187	11.5	10,901	9,041	1,860	.9	10,802	7,979	2,823	.7	10,622	7,161	3,461
87. Bonnyville	5,159	4,797	362	36.8	7,056	6,623	433	14.6	8,089	7,486	603	4.7	7,706	6,976	730	2.3	7,883	6,744	1,139	64.5	12,964	10,058	2,906	13.1	14,656	10,001	4,655
89. Smoky Lake	11,207	10,690	517	3.3	11,573	10,892	681	5.2	10,975	10,234	741	14.1	9,433	8,654	779	21.6	7,400	6,292	1,108	6.7	6,902	5,517	1,385	8.3	6,326	4,862	1,464
101. I.D.	1,233	1,233	-	57.4	1,941	1,941	-	31.2	2,547	2,547	-	18.5	2,076	2,076	-	7.65	2,235	2,235	-	8.8	2,039	2,039	-	5.3	1,930	1,930	-
102. I.D.	2,554	2,554	-	3.9	2,654	2,654	-	24.1	3,294	3,294	-	17.5	2,716	2,716	-	87.96	5,115	5,115	-	.96	5,066	5,066	-	5.5	4,784	4,784	-
121. I.D.	194	194	-	17.3	160	160	-	26.3	202	202	-	8.9	184	184	-	27.4	274	274	-	28.1	197	197	-	61.4	318	318	-
143. I.D.	1,270	1,270	-	13.8	1,445	1,445	-	60.3	2,316	2,316	-	10.3	2,555	2,555	-	67.3	835	835	-	5.3	879	879	-	85.9	1,634	1,634	-
Wood Buffalo N.P.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	36	36	-	297.2	143	143	-	-	-	-	-

Division No. 13

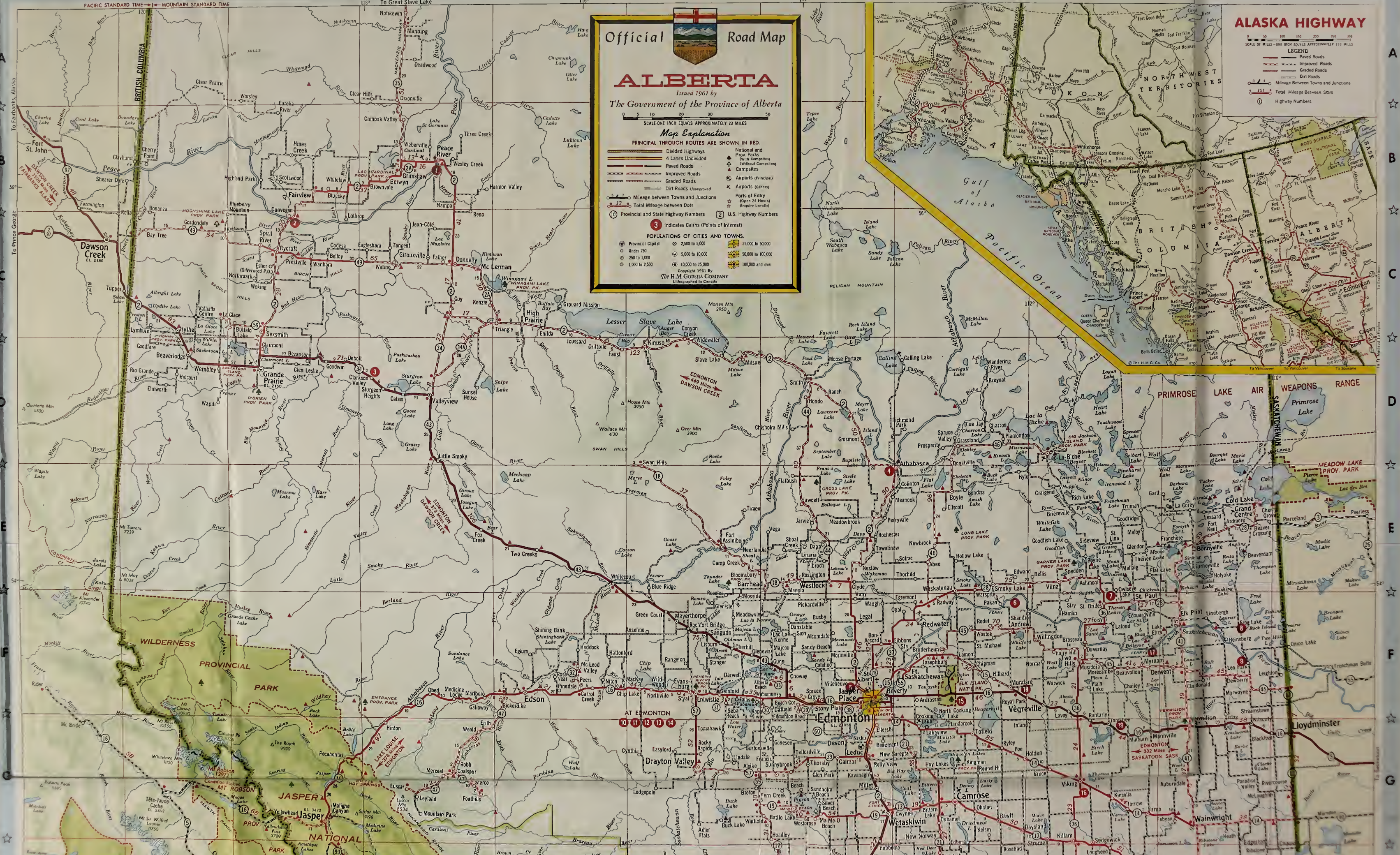
92. Westlock	7,520	6,798	722	6.1	7,976	7,316	660	1.9	8,129	7,379	750	5.5	7,682	6,678	1,004	31.8	10,125	8,795	1,330	.4	10,088	8,731	1,357	2.2	9,862	7,827	2,035
93. Lac Ste. Anne	7,375	7,029	346	16.9	8,621	8,227	394	6.4	9,173	8,565	608	28.2	6,582	5,767	815	25.96	8,291	7,282	1,009	2.3	8,103	6,892	1,211	5.1	8,513	7,115	1,398
103. Athabasca	7,101	6,528	573	13.9	8,086	7,478	608	8.1	8,740	8,162	578	3.8	8,406	7,659	747	10.3	9,268	8,200	1,068	3.3	8,964	7,367	1,597	4.9	8,524	6,740	1,784
106. Barrhead	4,841	4,619	222	30.8	6,332	6,025	307	11.9	7,086	6,687	399	8.1	6,512	5,773	739	18.9	7,744	6,501	1,243	2.5	7,554	5,944	1,610	7.5	8,121	5,693	2,428
107. I.D.	97	97	-	203.1	294	294	-	3.1	303	303	-	9.6	332	332	-	411.7	1,699	1,699	-	11.6	1,502	1,502	-	5.4	1,556	1,556	-
108. I.D.	961	961	-	81.8	1,747	1,747	-	14.8	2,005	2,005	-	19.4	1,616	1,616	-	52.4	770	770	-	1.4	781	781	-	19.2	631	631	-
122. I.D.	165	165	-	64.2	271	271	-	13.3	307	307	-	18.6	364	364	-	51.1	550	550	-	1.3	557	557	-	9.7	611	611	-
Thorhild Co.No.7	7,236	7,236	-	17.3	8,489	8,489	-	2.54	8,705	8,705	-	13.2	7,552	7,373	179	4.9	7,912	6,174	1,738	9.6	7,152	5,596	1,556	27.5	6,655	5,046	1,609

Division No. 14

78. I.D.	3,203	3,203	-	23.6	4,193	4,193	-	18.9	4,970	4,970	-	14.6	4,246	4,246	-	2.8	4,129	3,724	405	5.3	4,349	3,444	905	1.9	4,430	3,521	909
79. I.D.	3,293	3,293	-	6.1	3,494	3,494	-	11.0	3,879	3,879	-	9.3	4,240	4,240	-	5.8	3,992	3,992	-	44.0	2,234	2,234	-	82.0	4,066	650	3,416
95. I.D.	3,407	1,860	1,547	11.98	3,815	2,215	1,600	19.8	3,059	2,560	1,499	24.5	3,807	2,236	1,571	18.6	4,517	2,561	1,956	60.6	7,256	4,696	2,560	7.5	6,709	3,601	3,108
96. I.D.	121	121	-	22.3	94	94	-	9.6	85	85	-	95.3	166	166	-	80.1	299	299	-	5.0	314	314	-	33.8	420	420	-
109. I.D.	935	935	-	37.0	1,281	1,281	-	6.5	1,364	1,364	-	3.7	1,313	1,313	-	14.7	1,506	1,506	-	12.4	1,693	1,693	-	96.6	3,328	2,407	921

Division No. 15

110. I.D.	99	99	-	9.1	108	108	-	-	108	108	-	12.0	121	121	-	39.7	73	73	-	373.97	346	346	-	59.8	553	553	-
111. I.D.	134	134	-	22.4	164	164	-	62.8	267	267	-	20.97	211	211	-	53.6	324	324	-	25.6	241	241	-	39.0	335	335	-
123. I.D.	-	-	-	-	3	3	-	400.0	15	15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	915	279	636
124. I.D.	1,655	1,655	-	11.7	1,849	1,849	-	74.8	2,481	2,481	-	7.4	2,665	2,665	-	15.98	3,091	2,853	238	13.9	3,522	3,216	306	7.7	3,794	3,042	752
125. I.D.	2,600	2,600	-	14.3	2,971	2,971	-	.2	2,966	2,966	-	8.7	3,224	2,581	643	37.0	4,418	3,277	1,141	10.9	4,898	3,155	1,743	.9	4,943	3,225	1,718
126. I.D.	927	927	-	42.8	1,324	1,324	-	27.4	1,687	1,687	-	1.9	1,719	1,719	-	24.4	2,138	2,138	-	59.0	3,400	2,427	973	3.3	3,572	2,545	1,027
128. I.D.	336	336	-	20.2	404	404	-	13.2	356	356	-	7.0	381	381	-	55.6	593	593	-	59.7	947	947	-	21.0	748	748	-
129. I.D.	202	202	-	9.4	183	183	-	83.1	335	335	-	12.8	378	378	-	32.8	502	502	-	74.7	877	877	-	33.6	582	582	-
130. Smoky R.	4,178	3,925	253	13.1	4,725	4,441	284	3.4	4,888	4,644	244	3.0	5,037	3,935	1,102	19.6	6,023	4,374	1,649	6.5	6,414	3,955	2,459	.5	6,407	4,059	2,348
131. I.D.	2,044	1,180	864	14.3	2,337	1,454	883	2.2	2,388	1,515	873	1.3	2,358	1,361	997	58.2	3,730	2,058	1,672	19.2	4,447	2,413	2,034	14.3	5,085	2,378	2,707
132. I.D.	1,542	1,542	-	29.5	1,997	1,997	-	12.6	2,248	2,248	-	1.4	2,279	2,279	-	28.4	2,927	2,927	-	7.0	3,133	3,133	-	16.2	2,625	2,625	-
133. Spirit R.	2,032	1,800	232	4.5	2,124	1,890	234	.9	2,104	1,828	276	3.1	2,038	1,404	634	14.4	2,331	1,406	925	10.7	2,580	1,413	1,167	12.2	2,894	1,301	1,593
134. I.D.	2,094	2,094	-	12.8	2,362	2,362	-	10.3	2,606	2,606	-	7.4	2,414	2,414	-	8.5	2,618	2,618	-	.6	2,633	2,633	-	5.1	2,500	2,500	-
135. Peace	2,127	1,990	137	7.4	2,284	2,155	129	4.9	2,172	2,003	169	4.3	2,078	1,791	287	24.8	2,593	1,741	852	14.8	2,978	1,732	1,246	56.7	4,668	2,016	2,652
136. Fairview	2,524	2,264	260	11.6	2,836	2,443	393	2.8	2,758	2,326	432	7.1	2,561	2,074	487	15.6	2,960	2,031	929	6.3	3,145	1,885	1,260	6.4	3,347	1,883	1,464
137. I.D.	-	-	-	-	71	71	-	36.6	45	45	-	148.9	112	112	-	10.7	124	124	-	2.4	127	127	-	37.0	174	174	-
138. I.D.	2,895	2,895	-	18.5	3,432	3,432	-	11.1	3,814	3,814	-	3.7	3,674	3,674	-	14.6	4,210	4,210	-	.1	4,215	3,489	726	4.4	4,030	3,147	883
139. I.D.	1,700	1,700	-	30.3	2,215	2,215	-	13.1	2,506	2,506	-	15.8	2,110	2,110	-	42.5	3,007	3,007	-	.4	2,995	2,365	360	4.6	3,134	2,736	398
144. I.D.	45	45	-	33.3	60	60	-	38.3	37	37	-	140.5	89	89	-	29.2	115	115	-	77.4	26	26	-	715.4	212	212	-
145. I.D.	63	63	-	314.2	261	261	-	65.5	90	90	-	35.6	58	58	-	172.4	158	158	-	13.9	136	136	-	5.9	144	144	-
146. I.D.	123	123	-	21.1	149	149	-	87.2	279	279	-	36.9	382	382	-	97.4	754	754	-	15.9	634	634	-	3.8	658	658	-
147. I.D.	688	688	-	36.2	937	937	-	46.9	1,376	1,376	-	2.7	1,339	1,339	-	18.7	1,589	1,589	-	57.3	2,500	2,500	-	25.4	3,134	3,134	-
148. I.D.	23	23	-	60.9	9	9	-	33.3	12	12	-	-	12	12	-	-	-	-	-	-	-	-	-	-	86	86	-
149. I.D.	12	12	-	250.0	42	42	-	59.5	67	67	-	22.4	52	52	-	25.0	39	39	-	212.8	122	122	-	177.9	339	339	-
Grande Prairie Co. No. 1	3,183	740	2,443	257.0	11,364	10,952	2,412	19.9	13,264	10,809	2,455	3.2	13,188	9,651	3,537	7.9	14,228	10,126	4,102	19.95	17,067	8,899	8,168	11.7	19,057	8,699	10,348



Official Road Map

ALBERTA

Issued 1961 by
The Government of the Province of Alberta

SCALE ONE INCH EQUALS APPROXIMATELY 25 MILES

Map Explanation

PRINCIPAL THROUGH ROUTES ARE SHOWN IN RED

- Divided Highways
- 4 Lanes Undivided
- Paved Roads
- Improved Roads
- Graded Roads
- Dirt Roads (Unimproved)

- National and Prov. Parks (With Campsites)
- Campsites
- Airports (Principal)
- Airports (Other)
- Ports of Entry (Open 24 Hours) (Regular Locality)

Mileage between Towns and Junctions

Total Mileage between Dots

Provincial and State Highway Numbers

U.S. Highway Numbers

Indicates Cairns (Points of Interest)

POPULATIONS OF CITIES AND TOWNS

Population Range	Symbol
Provincial Capital	Star
Under 250	Small circle
250 to 1,000	Medium circle
1,000 to 2,500	Large circle
2,500 to 5,000	Large circle with dot
5,000 to 10,000	Large circle with cross
10,000 to 25,000	Large circle with plus
25,000 to 50,000	Large circle with star
50,000 to 100,000	Large circle with cross-hatch
100,000 and over	Large circle with solid fill

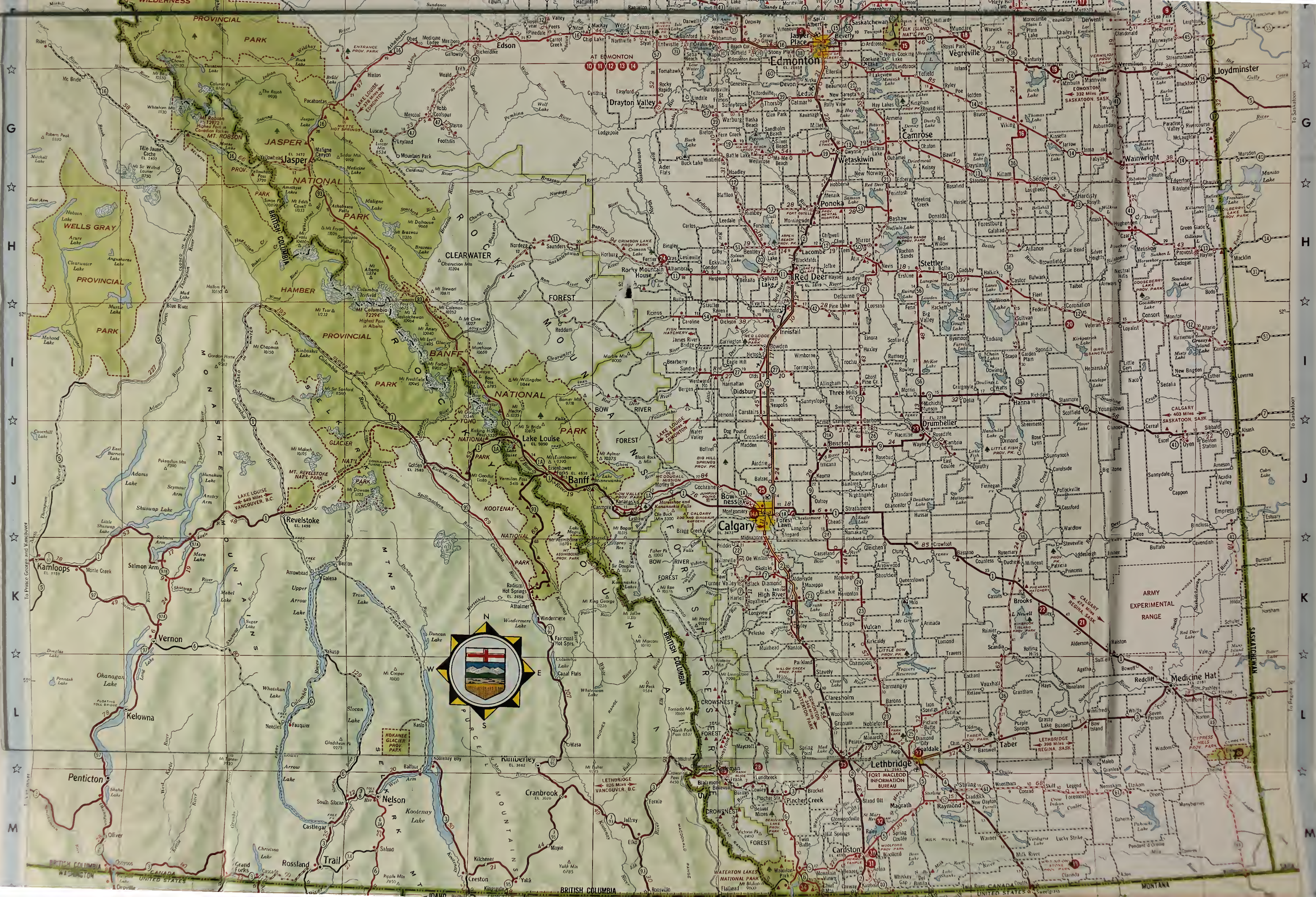
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ALASKA HIGHWAY

SCALE OF MILES - ONE INCH EQUALS APPROXIMATELY 133 MILES

LEGEND

- Paved Roads
- Improved Roads
- Graded Roads
- Dirt Roads
- Mileage between Towns and Junctions
- Total Mileage between Stars
- Highway Numbers



B29800